Panasonic
BUSINESS

APRIL 2018

System Camera and Switcher
Product Lineup

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4K PROFESSIONAL HDR

12G SDI

TICO

MoIP

4K Studio Camera

AK-UC4000GJ (Tajimi connector model) NEW

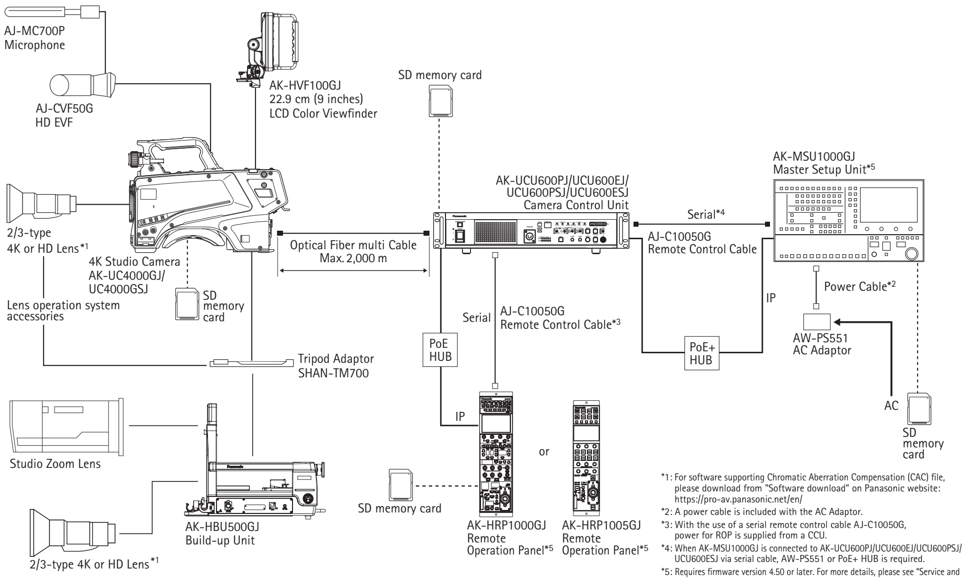
AK-UC4000GSJ (LEMO connector model) NEW

A 4K studio camera with high video quality. Compatible with a 2/3 lens mount and contains a newly developed large 4.4K sensor.

- Includes a newly developed large 4.4K image sensor. Sampling exceeding 4K is used to achieve a resolution of 2000 TV lines.
- High-speed capture at 1080p, 1080i and 720p is available for sports and other active settings.[*1]
- Uncompressed long-distance transmission of UHD/HD video signals via optical fiber, using the AK-UCU600 Camera Control Unit (CCU).
- In cases where power is supplied by the CCU, it is possible to transmit at a long distance of up to approx. 2,000 m between the camera and the CCU. The distance can be extended up to 10,000 m[*2] by providing a local power supply at the camera head and using a general-purpose single mode optical fiber.
- Two shooting modes can be selected. In High Sense Mode, it is possible to obtain an S/N ratio of 62 dB[*3] or higher while also achieving F10 high sensitivity.
- The camera's normal and low skew scanning speeds are around 1/2 and 1/3 of those on a standard camera (1/60 of a second) respectively, and enable reduced skew.
- The CAC (Chromatic Aberration Compensation) function automatically compensates for the registration error caused by lens chromatic aberration, and minimizes the circumjacent blur.[*4]
- HDR (High Dynamic Range) is simultaneously supported for production environments with both HDR and SDR. Variable HDR that enables further adjustment of the dynamic range is also available.
- Compatible with BT.2020, a color space that can recreate almost every color in the natural world.
- Includes a shockless gain function that supports 0.1 dB step master gain adjustment.
- Includes a wide range of color corrector functions, such as 12-pole color correction and linear matrix correction.
- Includes skin tone detail correction to tone down wrinkles and blemishes to beautifully shoot natural skin tones. The skin tone detail feature can define three independent skin tone ranges to manage different light levels or different people on camera.
- Includes ND filters (CAP, Through, 1/4, 1/16, 1/64)
- Includes CC filters (Cross, 3200 K, 4300 K, 6300 K, Diffusion).
- Quick and accurate focusing is supported with focus assist functions such as Focus Bar (indicates focus level), Focus-in-Red (uses color to indicate areas in focus), MAG (magnifies central portion), and Square (shows focus status of screen as a whole).
- For camera head output (HD-SDI 1/HD-SDI 2), 1080p, 1080i, and 720p can be selected.
- Video and data can be transmitted between the camera and a Camera Control Unit (CCU) using optical fiber cable alone.
- Two independent intercom lines are included and can be switched.

*1: When in HD Hi-Speed mode. Requires a firmware upgrade scheduled for release in the fall of 2018. *2: Signal deterioration may cause the transmission distance to become shorter when connecting optical fiber in multiple locations. Repeater devices may be required, depending on the conditions. *3: During HD output. *4: Functions in combination with a CAC compatible lens. For information on software that supports CAC files, see software download page of the Panasonic website (https://pro-av.panasonic.net/en/).

System Configuration



*1: For software supporting Chromatic Aberration Compensation (CAC) file, please download from "Software download" on Panasonic website: https://pro-av.panasonic.net/en/

*2: A power cable is included with the AC Adaptor.

*3: With the use of a serial remote control cable AJ-C10050G, power for ROP is supplied from a CCU.

*4: When AK-MSU1000GJ is connected to AK-UCU600PJ/UCU600EJ/UCU600PSJ/UCU600ESJ via serial cable, AW-PS551 or PoE+ HUB is required.

*5: Requires firmware version 4.50 or later. For more details, please see "Service and Support" on the following website(https://pro-av.panasonic.net/en/).

As of April, 2018

Camera Control Unit (CCU)

AK-UCU600PJ/UCU600EJ (Tajimi connector model) NEW
AK-UCU600PSJ/UCU600ESJ (LEMO connector model) NEW

The CCU supports not only UHD and HD simultaneous output, but also enables high-speed output*1 up to 240p in HD mode to be performed simultaneously with standard (1x) output, while still having a compact size.

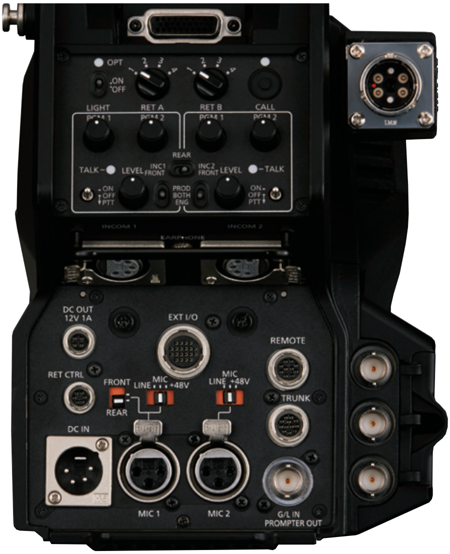
- Contains a dual UHD 12G-SDI system, and supports 3G-SDI quad link with quadrant or two-sample interleave.
- Optical fiber transmission of uncompressed video signals over a distance of approx. 2,000 m between camera and CCU*2.
- The compact, lightweight unit measures 2U in height and is rack-mountable.
- Supports IP streaming (100 Base-T).
- SD memory card can be used for saving user files and updating firmware versions.
- Dual uncompressed12G-SDI output.
- Supports TICO*3 over SDI (4K over 3G-SDI) output (4K signal can be transferred by a conventional 3G-SDI cable).
- Supports 1080p/i and 720p. In addition to standard output, high-speed output*1 at 2x, 3x or 4x can be selected according to the specifications of the server.
- Supports HDR/SDR simultaneous output and HDR BT.2020/BT.709 simultaneous output.
- 12G-SDI output and TICO*3 over SDI (4K over 3G-SDI) output are compatible with the AK-UC3000*4.
- Supports the next generation of MoIP (Media Over IP).*5

Supported formats

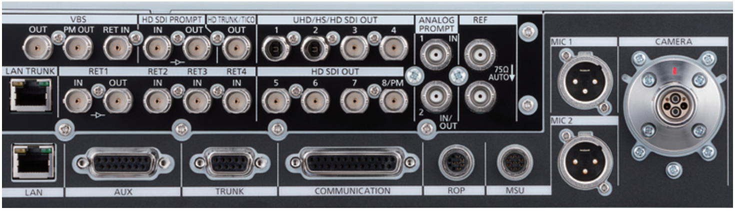
UHD	3840×2160/59.94p, 50p, 29.97p, 25p, 23.98p, 29.97PsF, 25PsF, 23,98PsF, 23.98PsF & over 59.94i
HD	1080/59.94p, 50p, 59.94i, 50i, 23.98p over 59.94i, 29.97PsF, 25PsF, 23.98PsF, 23.98PsF & over 59.94i, 720/59.94p, 50p
HD High Speed*1	1080/59.94p-240fps, 180fps, 120fps, 1080/50p-200fps, 150fps, 100fps, 1080/59.94i-240fps, 180fps, 120fps, 1080/50i-200fps, 150fps, 100fps, 720/59.94p-240fps, 180fps, 120fps, 720/50p-200fps, 150fps, 100fps

*1: When in HD Hi-Speed mode. Requires a firmware upgrade scheduled for release in the fall of 2018. *2: When power is supplied from CCU. *3: A codec developed by intoPIX. Stands for "Tiny Codec". *4: Requires a firmware upgrade scheduled for release in the fall of 2018. *5: Optional feature, scheduled for release in the spring of 2019.

AK-UC4000 Rear View



AK-UCU600 Rear View



AK-UC4000GJ/UC4000GSJ

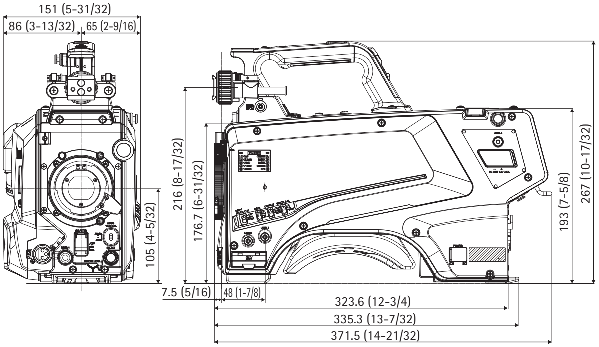
Power Supply	DC 12 V (when using an external power supply) AC 240 V, 50 Hz/60 Hz (when connecting to an AK-UCU600PJ/AK-UCU600EJ/AK-UCU600PSJ/AK-UCU600ESJ)
Power Consumption	119 W (maximum for the camera only, when connecting to an external 12 V) 360 W (when connecting to an AK-UCU600PJ/AK-UCU600EJ/AK-UCU600PSJ/AK-UCU600ESJ)
Operating Temperature	–10 °C to 45 °C (14 °F to 113 °F) (Preheating required under a temperature 0 °C (32 °F) or below)
Storage Temperature	–20 °C to 60 °C (–4 °F to 140 °F)
Operating Humidity	85% or less (relative humidity)
Weight	Approx. 4.5 kg (9.90 lb) (body only)
Dimensions (W x H x D)	Body only 151 mm x 267 mm x 371.5 mm (5-31/32 inches x 10-17/32 inches x 14-21/32 inches) (excluding protrusions)
Pickup Device	11.14 million pixels, MOS x 1
Optical Filter	CC: 3200 K, 4300 K, 6300 K , Cross, Diffusion ND: CAP, Clear, 1/4, 1/16, 1/64
Lens mount	2/3-type bayonet
Sensitivity	Two shooting modes [HIGH SENS]: F10 (59.94 Hz)/F11 (50 Hz) [NORMAL]: F6 (59.94 Hz)/F7 (50 Hz) 2000 lx, 3200 K, when white reflectivity is 89.9%
Horizontal Resolution	4K: 2000 TV lines or above (center) AK-UCU600PJ/AK-UCU600EJ/AK-UCU600PSJ/AK-UCU600ESJ output HD: 1000 TV lines or above (center)
S/N	62 dB or above
Horizontal Modulation	50% or above (27.5 MHz)
Gain switching	[NORMAL]: –6, –3, 0, 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, 36 [HIGH SENS]: –6, –3, 0, 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, 36
Shutter speed	•[59.94i]/[59.94p] mode: 1/100, 1/120, 1/125, 1/250, 1/500, 1/1000, 1/1500, 1/2000 •[29.97p] mode: 1/48, 1/50, 1/60, 1/96, 1/100, 1/120, 1/125, 1/250, 1/500, 1/1000, 1/1500, 1/2000 •[23.98p] mode: 1/48, 1/50, 1/60, 1/96, 1/100, 1/120, 1/125, 1/250, 1/500, 1/1000, 1/1500, 1/2000 •[50i]/[50p] mode: 1/60, 1/100, 1/125, 1/250, 1/500, 1/1000, 1/1500, 1/2000 •[25p] mode: 1/48, 1/50, 1/60, 1/96, 1/100, 1/125, 1/250, 1/500, 1/1000, 1/1500, 1/2000
<HD-SDI1> terminal	BNC x 1 3G/1.5G-SDI: 0.8 V [p-p], 75 Ω
<HD-SDI2> terminal	BNC x 1 3G/1.5G-SDI: 0.8 V [p-p], 75 Ω
<AUX> terminal	BNC x 1 Functions as <HD TRUNK> terminal/<PROMPTER2> terminal by switching the setting in the menu <HD TRUNK>: 1.5G-SDI: 0.8 V [p-p], 75Ω <PROMPTER2>: VBS signal 1 V [p-p], 75 Ω

<G/L IN/PROMPTER OUT> terminal	BNC x 1 <G/L IN>: Tri-level SYNC or BB (black burst) <PROMPTER OUT>: VBS signal 1 V [p-p], 75 Ω Functions as <G/L IN> when standalone, and as <PROMPTER OUT> when connecting to an AK-UCU600PJ/AK-UCU600EJ/AK-UCU600PSJ/AK-UCU600ESJ
<MIC 1> terminal	XLR x 1, 3-pin (female) <LINE>/<MIC>/<+48 V> switchable For <MIC>, <FRONT>/<REAR> switchable <LINE>: 0 dBu, +4 dBu menu selection available <MIC>: –60 dBu, –40 dBu, or –20 dBu menu can be selected
<MIC 2> terminal	XLR x 1, 3-pin (female) <LINE>/<MIC>/<–48 V> switchable <LINE>: 0 dBu, +4 dBu menu selection available <MIC>: –60 dBu, –40 dBu, or –20 dBu menu can be selected
<MIC> terminal (front)	XLR x 1, 3-pin (female) Switchable with <MIC 1> terminal
<INTERCOM1> terminal	XLR x 1, 5-pin (female)
<INTERCOM2> terminal	XLR x 1, 5-pin (female)
<EARPHONE> terminal	Stereo mini jack x 1
<OPT FIBER> terminal	Optical composite connector x 1, Tajimi/LEMO
<LENS> terminal	12-pin x 1
<VF> terminal	20-pin x 1
<VF> terminal (rear)	29-pin x 1
<DC IN> terminal	XLR x 1, 4-pin, DC 12 V
<DC OUT 12 V 1 A> terminal	4-pin x 1
<RET CTRL> terminal	6-pin x 1
<EXT I/O> terminal	20-pin x 1, DC 12 V 0.5 A
<REMOTE> terminal	10-pin x 1
<TRUNK> terminal	12-pin x 1
<DC OUT> terminal	2-pin x 1, DC 12 V 2.5 A
<LAN> terminal	RJ-45 x 1
<USB2.0> terminal (host)	Type A connector, DC 5 V 0.5 A
Build-up terminal	20-pin x 1

Dimensions

Unit: mm(inches)

■AK-UC4000GJ/UC4000GSJ



As of April, 2018

AK-UCU600PJ/UCU600EJ/UCU600PSJ/UCU600ESJ

Power Supply	AK-UCU600PJ/AK-UCU600PSJ: 100 V - 120 V AC, 50 Hz/60 Hz AK-UCU600EJ/AK-UCU900ESJ: 100 V - 240 V AC, 50 Hz/60 Hz
Power Consumption	500 W (Without camera connected: 90 W)
Capacity for Supplying Power to a Camera	240 V AC (tolerance: 5%), 1.46 A , 50 Hz/60 Hz
Operating Temperature	0 °C to 40 °C (32 °F to 104 °F)
Humidity	10% to 90% (no condensation)
Weight	Approx. 8.8 kg (19.4 lb)
Dimensions (W x H x D)	424 mm x 88 mm x 401 mm (16-5/8 inches x 3-7/16 inches x 15-13/16 inches) (excluding protrusions)
Video Output	3G/HD/SD-SDI: 7 lines (embedded audio is supported only for HD signals) HD/SD-SDI: 1 line (shared with picture monitor output*[1] ; embedded audio is supported only for HD signals) Analog composite: 2 lines (1 line shared with picture monitor output*[1]) * For details on output formats, see "Supported formats" on page 5.
HD TRUNK/TICO Output	HD-SDI: 1 line (HD TRUNK output) 3G/HD-SDI: 1 line (TICO output)
Return Input	3G-HD/HD/SD-SDI: 4 lines (RET1 input has active-through output) Analog composite: 1 line
Prompter Input	HD-SDI: 1 line (with active-through output) Analog composite: 2 lines (through output of 1 and input of 2 share the connector*[1]) It is not terminated when the unit is turned OFF. No through output.
Reference Input	BB (black burst) / tri-level*[2]: 1 line (automatic termination, connect to upper connector; BB signal and tri-level signal automatically recognized, with loop-through output)
Microphone Output	0 dBm/600 Ω, 2 lines (XLR, 3-pin, male)

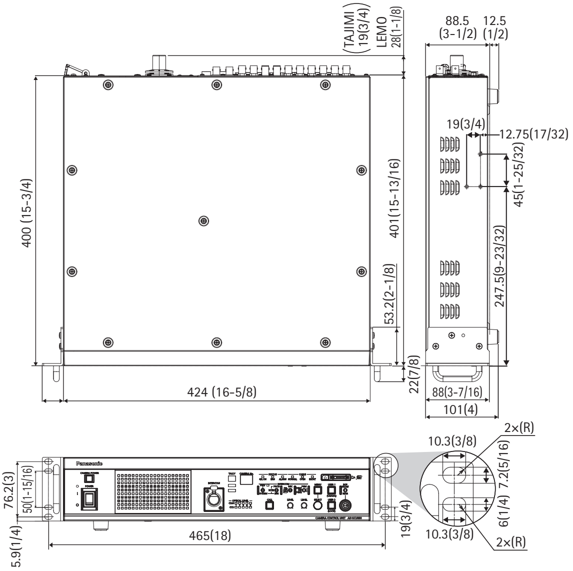
Communication	Intercom input/output (ENG / PROD, 0 dBm, 600 Ω (4 W) / 1 V [p-p], 200 Ω (RTS), 4 W / RTS / CLRCOM) : 2 lines*[1] PGM input (0 dBm/600 Ω) : 2 lines Tally input (red, green, yellow) : 1 input each
AUX	WFM control 6-bit (open collector output, terminal shared with camera microphone gain setting*[1]) Camera microphone gain setting input 5-bit (photo-coupler input, terminal shared with WFM control*[1]) Down-conversion system setting input 2-bit (photo-coupler input)
TRUNK	RS-422 / RS-232C 2 lines*[1]
FRONT ROP	RS-422 1 line, 16 V DC output (only one of this and REAR ROP can be selected at one time via the menu or the [ROP FRONT/REAR] selection switch on the front panel)
REAR ROP	RS-422 1 line, 16 V DC output (only one of this and FRONT ROP can be selected at one time via the menu or the [ROP FRONT/REAR] selection switch on the front panel)
MSU	RS-422 1 line, GPI for control
LAN TRUNK*[3]	LAN connection with camera side via an optical cable*[4] 1 line, 100BASE-T, 1000BASE-T
LAN	Personal computer connection for distribution via the Web*[4] 1 line, 10BASE-T, 100BASE-TX (use a crossover cable when connecting directly with a personal computer)

*1: Depending on the setting, only one of them can be selected at one time.
*2: The BB (black burst) signal and tri-level sync signal of the reference input are recognized automatically.
*3: Requires a firmware upgrade scheduled for release in the fall of 2018.
*4: IP video cannot be transmitted when [CCU MODE] is set to [2160/23.98p], [2160/23.98PsF], [1080/23.98p], or [1080/23.98PsF].

Dimensions

Unit: mm(inches)

AK-UCU600PJ/UCU600EJ/UCU600PSJ/UCU600ESJ



* Dimensions are for LEMO connector model.

4K Studio Camera

AK-UC3000GJ (Tajimi connector model)
AK-UC3000GSJ (LEMO connector model)

Equipped with a large-format 4K sensor, this camera produces highly expressive 4K video with rich gradation in addition to supporting simultaneous HD/SD.

- The 2/3 lens can be used for the large 4K sensor without an external adapter. This new acquisition method maximizes the effectiveness of incident light to ensure a high dynamic range.
- Supports both UHD output and HD/SD output.[*1]
- Two shooting modes can be selected. In High Sense Mode, it is possible to obtain an S/N ratio of 60 dB or higher while also achieving F10 high sensitivity.

List of supported formats

UHD (3G-SDI x 4)	3840 x 2160/59.94p, 50p, 29.97p, 25p, 23.98p, 29.97PsF, 25PsF, 23.98PsF
HD (3G-SDI)	1080/59.94p, 50p, 59.94i, 50i, 23.98p over 59.94i, 29.97PsF, 25PsF, 23.98PsF, 720/59.94p, 50p
SD	480/59.94i, 576/50i

*1: AK-UCU500 Camera Control Unit (CCU) outputs UHD/HD/SD video.

HD Studio Camera

AK-HC5000GJ (Tajimi connector model)
AK-HC5000GSJ (LEMO connector model)

AK-HC5000 HD Studio Camera allows for 1080p 4x high-speed shooting for vivid imaging of exciting moments in sports and events.

- Supports 1080p 4x high-speed capture.[*2]
- Includes 2/3 3MOS sensors and enables two shooting modes to be selected. The high-speed mode provides F11 high sensitivity and low noise with an S/N ratio of 60 dB or more.

List of supported formats[*3]

HD	(3G-SDI)	1080/59.94p, 50p, 59.94i, 50i, 23.98p over 59.94i, 29.97PsF, 25PsF, 23.98PsF, 720/59.94p, 50p
	High Speed (3G-SDI x 4)	1080/239.76p, 200p, 239.76i, 200i
SD		480/59.94i, 576/50i

*2: To obtain the 1/4 slow effect, a device to separately record 1080/239.76p, 200p is necessary.
*3: AK-UCU500 Camera Control Unit (CCU) outputs 4x HD/HD/SD video.

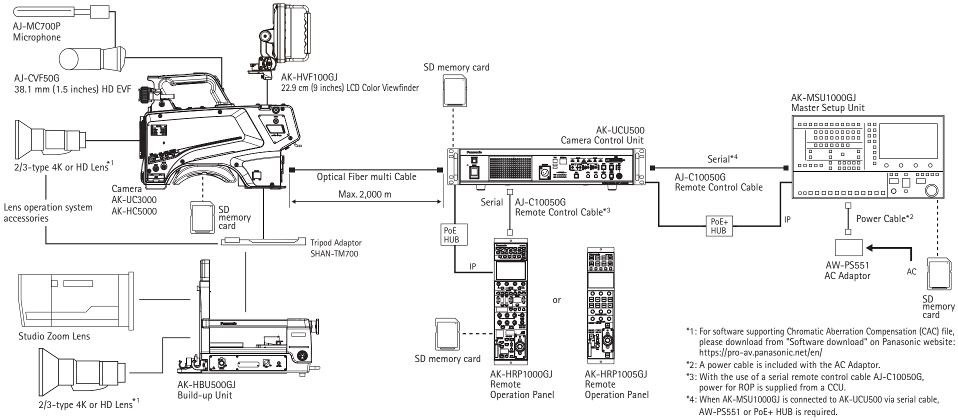
Feature common to both the AK-UC3000 and AK-HC5000

- In cases where power is supplied by the CCU, it is possible to transmit at a long distance of up to approx. 2,000 m between the camera and the CCU. The distance can be extended up to 10,000 m[*4] by providing a local power supply at the camera head and using a general-purpose single mode optical fiber.
- Includes a CAC (Chromatic Aberration Compensation) function.[*5]
- Includes a function for reducing skew with high-speed scanning.
- Includes a DRS (Dynamic Range Stretcher) function[*6] that automatically reduces blackout and blown-out highlights.
- Adopts a selectable gamma function that provides FILMLIKE1 to FILMLIKE 3 in addition to the Cinegamma function (V-REC/F-REC).
- Supports HDR (High Dynamic Range).
- Includes a shockless gain function that supports 0.1 dB step master gain adjustment to smoothly change the video when the gain is adjusted.
- Includes a EBU/NTSC preset color matrix, 12-pole color correction and linear matrix correction to enable fine adjustment of the saturation and hue of individual colors.
- Includes skin tone detail correction.
- Includes ND filters (CAP, Through, 1/4, 1/16, 1/64).
- Includes CC filters (Cross, 3200 K, 4300 K, 6300 K, Diffusion).
- Quick and accurate focusing is supported with focus assist functions such as Focus Bar (indicates focus level), Focus-in-Red (uses color to indicate areas in focus), MAG (magnifies central portion), and Square (shows focus status of screen as a whole).
- For camera head output (HD-SDI 1/HD-SDI 2), 1080p, 1080i, and 720p can be selected.
- Video and data can be transmitted between the camera and a Camera Control Unit (CCU) using optical fiber cable alone.
- Two independent intercom lines are included and can be switched.

*4: Signal deterioration may cause the transmission distance to become shorter when connecting optical fiber in multiple locations. Repeater devices may be required, depending on the conditions.
*5: Functions in combination with a CAC compatible lens. For information on software that supports CAC files, see software download page of the Panasonic website (https://pro-av.panasonic.net/en/).
*6: For the AK-UC3000GJ/UC3000GSJ, only when in HD mode.

As of April, 2018

System Configuration



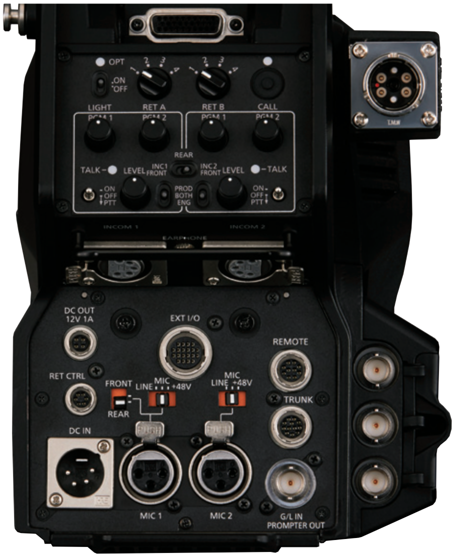
*1: For software supporting Chromatic Aberration Compensation (CAC) file, please download from "Software download" on Panasonic website: https://pro-av.panasonic.net/en/

*2: A power cable is included with the AC Adaptor.

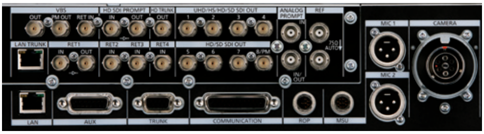
*3: With the use of a serial remote control cable AJ-C10050G, power for ROP is supplied from a CCU.

*4: When AK-MSU1000GJ is connected to AK-UCU500 via serial cable, AW-PS551 or PoE+ HUB is required.

AK-UC3000/AK-HC5000 Rear View



AK-UCU500 Rear View



Camera Control Unit (CCU)

AK-UCU500PJ/AK-UCU500EJ (Tajimi connector model)
AK-UCU500PSJ/AK-UCU500ESJ (LEMO connector model)

The CCU supports both 4K and HD formats by just changing the camera head.
It enables a high-quality, long-distance optical fiber transmission camera system to be configured with less cost.

- Optical fiber transmission of uncompressed video signals over a distance of approx. 2,000 m between camera and CCU*1.
- The compact, lightweight unit measures 2U in height and is rack-mountable.
- Supported formats
  UHD (3G-SDI x 4)*2 : 3840 x 2160/59.94p, 50p, 29.97p, 25p, 23.98p, 29.97PsF, 25PsF, 23.98PsF
  HD (3G-SDI) : 1080/59.94p, 50p, 59.94i, 50i, 23.98p over 59.94i, 29.97PsF, 25PsF, 23.98PsF, 720/59.94p, 50p
  HD High Speed (3G-SDI x 4)*3 : 1080/239.76p, 200p, 239.76i, 200i
  SD : 480/59.94i, 576/50i
- Supports IP streaming (100 Base-T).
- SD memory card can be used for saving user files and updating firmware versions.
- Input/output
  SDI OUT x 7, SDI OUT (PM) x 1, VBS x 1, etc.
  *4K MODE*2 : SDI OUT x 4 (4K), SDI OUT x 3, SDI OUT (PM) x 1, VBS x 1, VBS (PM) x 1
  *HS MODE*3 : SDI OUT x 4 (HS), SDI OUT x 3, SDI OUT (PM) x 1, VBS x 1, VBS (PM) x 1
  RET Input (SDI: 4ch, VBS: 1ch) etc.
  LAN-TRUNK (100/1000BASE-T)
  PROMPT Input (SDI : 1ch, ANALOG : 2ch)

*1: When power is supplied from CCU.
*2: When Connected with AK-UC3000 4K Studio Camera.
*3: When Connected with AK-HC5000 HD Studio Camera.

AK-UC3000GJ/UC3000GSJ/AK-HC5000GJ/HC5000GSJ

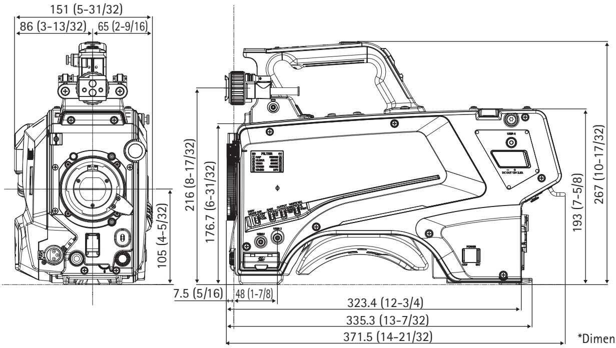
Power Supply	DC 12 V (when using an external power supply) AC 240 V, 50 Hz/60 Hz (when AK-UCU500PJ/AK-UCU500EJ/AK-UCU500PSJ/AK-UCU500ESJ is connected)
Power Consumption	119 W (maximum, when connecting to an external 12 V and including supply to an externally connected devices) 360 W (maximum, when AK-UCU500PJ/AK-UCU500EJ/AK-UCU500PSJ/AK-UCU500ESJ is connected and including supply to an externally connected devices)
Operating Temperature	–10 °C to 45 °C (14°F to 113°F) (Preheating required under a temperature 0 °C (32 °F) or below)
Storage Temperature	–20 °C to 60 °C (–4°F to 140°F)
Operating Humidity	85% or less (relative humidity)
Weight	Approx. 4.4 kg (9.70 lbs.) (body only, excluding the accessories)
Dimensions (W x H x D)	Body only 151 mm x 267 mm x 371.5 mm (5-31/32 inches x 10-17/32 inches x 14-21/32 inches) (excluding protrusions)
Pickup Device	AK-UC3000: 11 million pixels, CMOS x 1 AK-HC5000: 2/3-type, 2.2 million pixels, MOS x 3
Optical Filter	CC: 3200 K, 4300 K, 6300 K, Cross, Diffusion ND: CAP, Clear, 1/4, 1/16, 1/64
Lens mount	2/3-type bayonet
Sensitivity	Two shooting modes AK-UC3000: [HIGH SENS]: F10 (59.94 Hz)/F11 (50 Hz) [NORMAL]: F6 (59.94 Hz)/F7 (50 Hz) 2000 lx, 3200 K, when white reflectivity is 89.9% AK-HC5000: [HIGH SENS]: F11 (59.94 Hz)/F12 (50 Hz) [NORMAL]: F8 (59.94 Hz)/F9 (50 Hz) 2000 lx, 3200 K, when white reflectivity is 89.9%
Horizontal Resolution	AK-UC3000: 4K: 1800 TV lines or above (center, AK-UCU500P/AK-UCU500PS/AK-UCU500E/AK-UCU500ES output) HD: 1000 TV lines or above (center) AK-HC5000: 1000 TV lines or above (center)
S/N	60 dB or above
Horizontal Modulation	50% or above (27.5 MHz)
Gain switching	AK-UC3000: [NORMAL]: –6, –3, 0, 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, 36 [HIGH SENS]: –6, –3, 0, 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, 36 AK-HC5000: [NORMAL]: –3, 0, 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, 36 [HIGH SENS]: –6, –3, 0, 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, 36
Shutter speed	•[59.94i]/[59.94p] mode: 1/100, 1/120, 1/125, 1/250, 1/500, 1/1000, 1/1500, 1/2000 •[29.97p] mode: 1/48, 1/50, 1/60, 1/96, 1/100, 1/120, 1/125, 1/250, 1/500, 1/1000, 1/1500, 1/2000 •[23.98p] mode: 1/48, 1/50, 1/60, 1/96, 1/100, 1/120, 1/125, 1/250, 1/500, 1/1000, 1/1500, 1/2000 •[50i]/[50p] mode: 1/60, 1/100, 1/125, 1/250, 1/500, 1/1000, 1/1500, 1/2000 •[25p] mode: 1/48, 1/50, 1/60, 1/96, 1/100, 1/125, 1/250, 1/500, 1/1000, 1/1500, 1/2000

<HD-SDI1> terminal	BNC x 1 HD (3G/1.5G): 0.8 V [p-p], 75 Ω
<HD-SDI2> terminal	BNC x 1 HD (3G/1.5G): 0.8 V [p-p], 75 Ω
<AUX> terminal	BNC x 1 Functions as <HD TRUNK> terminal/<PROMPTER2> terminal by switching the setting in the menu <HD TRUNK>: HD (1.5G) <PROMPTER2>: VBS signal 1 V [p-p], 75 Ω
<G/L IN/PROMPTER OUT> terminal	BNC x 1 <G/L IN>: Tri-level SYNC or BB (black burst) <PROMPTER OUT>: VBS signal 1 V [p-p], 75 Ω Functions as <G/L IN> when standalone, and as <PROMPTER OUT> when AK-UCU500PJ/AK-UCU500EJ/AK-UCU500PSJ/AK-UCU500ESJ is connected
<MIC 1> terminal	XLR x 1, 3-pin <LINE>/<MIC>/<+48 V> switchable For <MIC>, <FRONT>/<REAR> switchable <LINE>: 0 dBu, +4 dBu menu selection available <MIC>: –60 dBu, –40 dBu, or –20 dBu menu can be selected
<MIC 2> terminal	XLR x 1, 3-pin <LINE>/<MIC>/<–48V> switchable <LINE>: 0 dBu, +4 dBu menu selection available <MIC>: –60 dBu, –40 dBu, or –20 dBu menu can be selected
<MIC> terminal (front)	XLR x 1, 3-pin Switchable with <MIC 1> terminal
<INTERCOM1> terminal	XLR x 1, 5-pin
<INTERCOM2> terminal	XLR x 1, 5-pin
<EARPHONE> terminal	Stereo mini jack x 1, 3-pin
<OPT FIBER> terminal	Optical composite connector x 1
<LENS> terminal	12-pin x 1
<VF> terminal	20-pin x 1
<VF> terminal (rear)	29-pin x 1
<DC IN> terminal	XLR x 1, 4-pin, DC 12 V
<DC OUT 12 V 1 A> terminal	4-pin x 1
<RET CTRL> terminal	6-pin x 1
<EXT I/O> terminal	20-pin x 1, DC 12 V, 0.5 A
<REMOTE> terminal	10-pin x 1
<TRUNK> terminal	12-pin x
<DC OUT 12 V 2.5 A> terminal	2-pin x 1
<LAN> terminal	RJ-45 x 1
<USB2.0> terminal (host)	Type A connector, DC 5 V, 0.5 A
Build-up terminal	20-pin x 1

Dimensions

Unit: mm(inches)

AK-UC3000GJ/UC3000GSJ/AK-HC5000GJ/HC5000GSJ



*Dimensions above are for the AK-UC3000.

As of April, 2018

AK-UCU500PJ/UCU500EJ/UCU500PSJ/UCU500ESJ

Power Supply	AK-UCU500PJ/AK-UCU500PSJ: 100 V - 120 V AC, 50 Hz/60 Hz AK-UCU500EJ/AK-UCU500ESJ: 100 V - 240 V AC, 50 Hz/60 Hz
Power Consumption	500 W (Without camera connected: 70 W)
Capacity for Supplying Power to a Camera	240 V AC (tolerance: 5%), 1.46 A , 50 Hz/60 Hz
Operating Temperature	0°C to 40°C (32°F to 104°F)
Humidity	10% to 90% (no condensation)
Weight	Approx. 8.8 kg (19.4 lb)
Dimensions (W x H x D)	424 mm x 88 mm x 401 mm (16-5/8 inches x 3-7/16 inches x 15-13/16 inches) (excluding protrusions)
Video Output	3G/HD/SD-SDI: 7 lines (embedded audio is supported only for HD signals) HD/SD-SDI: 1 line (shared with picture monitor output*1 ; embedded audio is supported only for HD signals) Analog composite: 2 lines (1 line shared with picture monitor output*1)
HD TRUNK Output	HD-SDI: 1 line (cannot be used in UHD/HS mode)
Return Input	3G-HD/HD/SD-SDI: 4 lines (RET1 input has active-through output) Analog composite: 1 line
Prompter Input	HD-SDI: 1 line (with active-through output) Analog composite: 2 lines (through output of 1 and input of 2 share the connector*1) It is not terminated when the unit is turned OFF. No through output.
Reference Input	BB (black burst) / tri-level*2: 1 line (automatic termination, connect to upper connector; BB signal and tri-level signal automatically recognized, with loop-through output)
Microphone Output	0 dBm/600 Ω, 2 lines (XLR, 3-pin, male)

Communication	Intercom input/output (ENG / PROD, 0 dBm, 600 Ω (4 W) / 1 V [p-p], 200 Ω (RTS), 4 W / RTS / CLRCOM) : 2 lines*1 PGM input (0 dBm/600 Ω) : 2 lines Tally input (red, green, yellow) : 1 input each
AUX	WFM control 6-bit (open collector output, terminal shared with camera microphone gain setting*1) Camera microphone gain setting input 5-bit (photo-coupler input, terminal shared with WFM control*1) Down-conversion system setting input 2-bit (photo-coupler input)
TRUNK	RS-422 / RS-232C 2 lines*1
FRONT ROP	RS-422 1 line, 16 V DC output (only one of this and REAR ROP can be selected at one time via the menu or the [ROP FRONT/REAR] selection switch on the front panel)
REAR ROP	RS-422 1 line, 16 V DC output (only one of this and FRONT ROP can be selected at one time via the menu or the [ROP FRONT/REAR] selection switch on the front panel)
MSU	RS-422 1 line, GPI for control
LAN TRUNK	LAN connection with camera side via an optical cable*3 1 line, 100BASE-T, 1000BASE-T
LAN	Personal computer connection for distribution via the Web*3 1 line, 10BASE-T, 100BASE-TX (use a crossover cable when connecting directly with a personal computer)

*1: Depending on the setting, only one of them can be selected at one time.

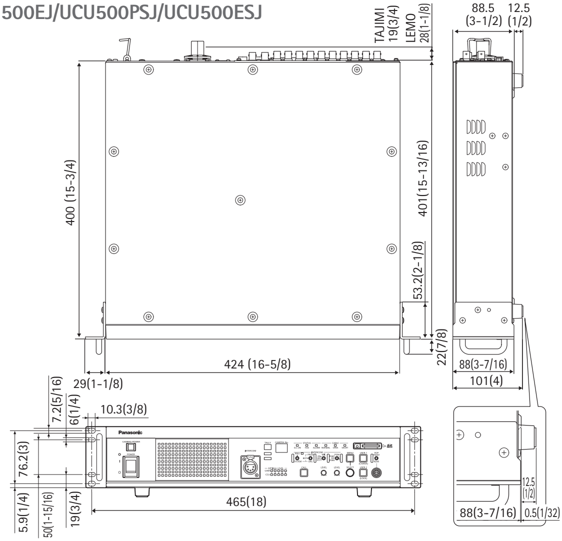
*2: The BB (black burst) signal and tri-level sync signal of the reference input are recognized automatically.

*3: IP video cannot be transmitted when [CCU MODE] is set to [2160/23.98p], [2160/23.98PsF], [1080/23.98p], or [1080/23.98PsF].

Dimensions

Unit: mm(inches)

AK-UCU500PJ/UCU500EJ/UCU500PSJ/UCU500ESJ



AK-HRP1000GJ

AK-HRP1005GJ

Remote Operation Panel (ROP)

AK-HRP1000GJ
AK-HRP1005GJ

Expand operation scope with two size options: a full operation panel and a simplified panel. These compact operation panels also support PoE*1 and IP control.

- Two models: 1/4 rack size (AK-HRP1000GJ) and 1/5 rack size (AK-HRP1005GJ).
- LCD panels with enhanced visibility.
  AK-HRP1000GJ: 8.9 cm (3.5 inches) (VGA)
  AK-HRP1005GJ: 8.1 cm (3.2 inches) (VGA)
- Camera serial control and IP control (RJ45 LAN cable) are possible.
- Supports PoE*1, which can supply power via LAN cable (CAT5e or faster).
- Functions for studio camera scene file registration and retrieval.
- Equipped with SD memory card slot for saving user files, scene file and updating firmware versions.

Master Setup Unit (MSU)

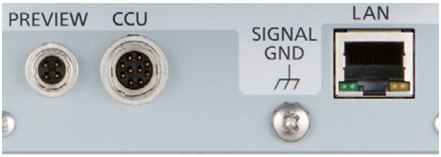
AK-MSU1000GJ

Controls up to 99 CCU units via IP

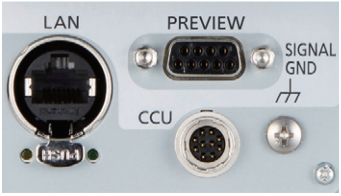
- IP and serial connections supported.
  IP connection: Up to 99 units
  Serial connection: Up to six units
- 17.8 cm (7 inches) Touch Panel LCD
  Video monitoring function
- HD-SDI Input (Monitoring) (1080i)
- Power DC12 V (DC10 V - DC17 V) or PoE+*1 (via PoE+ Hub)

AK-HRP1000GJ/HRP1005GJ Rear View

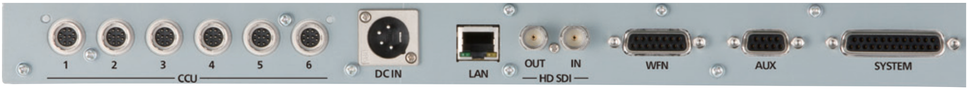
AK-HRP1000GJ



AK-HRP1005GJ



AK-MSU1000GJ Rear View



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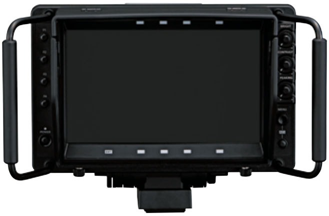
*1: Abbreviation of Power over Ethernet.

- The firmware version 4.50 or later is required to use the AK-HRP1000GJ/1005GJ remote operation panel and the AK-MSU1000GJ master setup unit with the AK-UC4000 studio camera and the AK-UCU600 camera control unit.

As of April, 2018



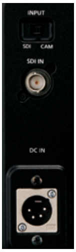
22.9 cm (9 inches) LCD Color Viewfinder

AK-HVF100GJ

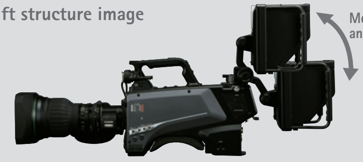
Equipped with newly designed tilt mechanism and extensive functions such as focus assist and external video input.

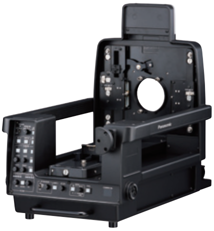
- High-resolution 22.9 cm (9 inches) color LCD panel displays full HD 1920 x 1080 pixel
- Focus assist functions (Focus-in-Red, Focus Bar*[1])
- Detail depends on zoom ratio*[1]
- External HD-SDI (3G-SDI) input
- External DC input (+12 V DC)
- Four assignable function buttons
- Contrast, brightness, and peaking are adjustable
- Pan, tilt, and lift structure used

Rear View



Lift structure image





Build-up Unit

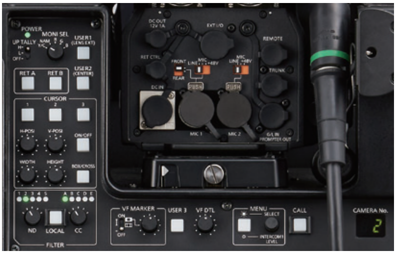
AK-HBU500GJ

Enables use of large studio-use lens.

- Smooth camera mounting/removal possible
- Precise optical axis (horizontal/vertical) adjustment structure
- Rear control panel equivalent to that of a large camera
- DC OUT 12V 7.5 A (XLR4-pin)/DC OUT 1.5 A (4-pin)

Side View

Rear control panel



Other accessories

AJ-CVF50G
38.1 mm (1.5 inches) HD EVF

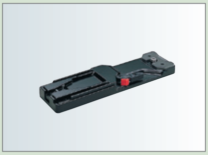
AJ-HVF21KG
50.8 mm (2 inches) HD EVF
59.94 Hz/50 Hz Switchable
Not available in some areas.

AG-CVF15G
87.6 mm (3.45 inches) Color HD EVF
Open two ways for LCD monitor viewing

AK-HVF70G
17.8 cm (7 inches) LCD Color Viewfinder

AJ-MC700P
Microphone Kit (monaural)

AW-PS551
AC Adaptor



SHAN-TM700
Tripod Adaptor

AJ-C10050G
Remote Control Cable
(50 m / 164 feet)

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*1: When connected to AK-UC4000, AK-UC3000 or AK-HC5000.

AK-HRP1000GJ/HRP1005GJ

	AK-HRP1000GJ	AK-HRP1005GJ
Power Supply	12 V DC (Power supply from camera: 10 V - 16 V DC) 42 V - 57 V DC (PoE power supply)	
Power Consumption	0.51 A (Power supply from camera: 10 V - 16 V DC) 0.15 A (PoE power supply)	0.44 A (Power supply from camera: 10 V - 16 V DC) 0.11 A (PoE power supply)
Operating Temperature	0 °C to 40 °C (32 °F to 104 °F)	
Humidity	90% or less	
Storage Temperature	-20 °C to 60 °C (-4 °F to 140 °F)	
Weight	Approx. 1.7 kg (3.75 lb)	Approx. 1.5 kg (3.31 lb)
Dimensions (W x H x D)	102 mm x 385 mm x 113 mm (4 inches x 15-3/16 inches x 4-7/16 inches)	82 mm x 355 mm x 124.4 mm (3-1/4 inches x 14 inches x 4-7/8 inches)
Camera/CCU Control	Control signals (camera, CCU control) Power supply 16 V DC (when CCU is connected)*[1], 12 V DC (when camera is connected)*[1]	
Maximum Cable Length	When camera connected: 20 m (65.7 ft) When CCU is connected: 50 m (164 ft)	

AK-MSU1000GJ

Power Supply	12 V DC (DC input range: 10 V - 16 V DC) 42 V - 57 V DC (PoE+ power supply)
Power Consumption	1.6 A (Power supply: 12 V DC) 0.6 A (PoE+ power supply)
Operating Temperature	0 °C to 40 °C (32 °F to 104 °F)
Humidity	90% or less
Storage Temperature	-20 °C to 60 °C (-4 °F to 140 °F)
Weight	Approx. 4.0 kg (8.82 lb)
Dimensions (W x H x D)	482 mm x 222 mm x 81.5 mm (18-31/32 inches x 8-3/4 inches x 3-7/32 inches) (including mounting brackets and dial heights)
Adjustment Functions	Scene file, ND filter, CC filter, Color temperature (COLOR TEMP), Master gain (MASTER GAIN), Shutter (SHUTTER), Master pedestal (MPED), Iris (IRIS), Camera selection
CCU Control	RS422 or IP
Maximum Cable Length	When CCU is connected: 50 m (164 ft)

AK-HVF100GJ

Power Supply	DC 12 V (supplied from camera or XLR)
Power Consumption	18 W
Operating Temperature	0 °C to 45 °C (32 °F to 113 °F)
Operating Humidity	10% – 85% (no condensation)
Storage Temperature	-20 °C to 60 °C (-4 °F to 140 °F)
Weight	Approx. 2.6 kg (5.73 lbs.) (not including hood) / Approx. 3.0 kg (6.61 lbs.) (including hood)
Dimensions (W x H x D)	340 mm x 234 mm x 193 mm (13-13/32 inches x 9-7/32 inches x 7-5/8 inches) (not including hood) 340 mm x 234 mm x 231 mm (13-13/32 inches x 9-7/32 inches x 9-1/8 inches) (including hood)
Display Panel	22.9 cm (9.0 inches)
Number of Pixels	1920 x 1080 (FHD)
Display Color	Approx. 16.77 million colors
Operation	<POWER> switch, <MENU> button, <SELECT> dial button, <F1>/<F2>/<F3>/<F4> buttons, <BRIGHT> knob, <CONTRAST> knob, <PEAKING> knob, <INPUT> switch
Connector	Camera I/F connector (D-sub 29 pins x 1) SDI IN connector (BNC x 1) DC IN connector (XLR 4 pins x 1)
Supported Signal Format	CAM: 1080/59.94i, 1080/50i SDI: 1080/59.94p, 1080/50p, 1080/59.94i, 1080/50i, 720/59.94p, 720/50p

AK-HBU500GJ

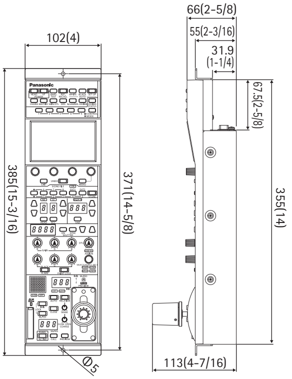
Power Supply	12 V DC (when external power is supplied) 240 V AC 50 Hz/60 Hz (when CCU is connected)
Power Consumption	70 W (when external power is supplied) 165 W (when CCU is connected)
Operating Temperature	-10 °C to 45 °C (14 °F to 113 °F)
Operating Humidity Range	85% or less (relative humidity)
Storage Temperature	-20 °C to 60 °C (-4 °F to 140 °F)
Weight	Approx. 12.8 kg (28.22 lb) (unit only)
Dimensions (W x H x D)	300 mm x 417 mm x 510 mm (16-7/16 inches x 20-1/16 inches x 11-13/16 inches)
Camera Number Display	1 to15 (depending on system settings)
LENS I/F Connector	36-pin x 1
CAMERA I/F Connector	20-pin x 1
[DC IN] Connector	XLR x 1, 4-pin, 12 V DC
[DC OUT 12 V 1.5 A] Connector	4-pin x 1
[DC OUT 12 V 7.5 A] Connector	XLR x 1, 4-pin

*1: Can be provided from CCU

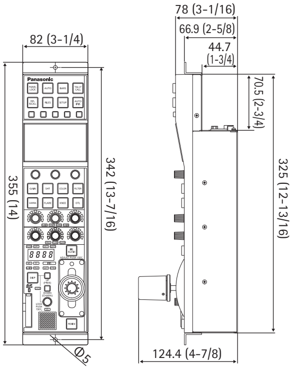
Dimensions

Unit: mm(inches)

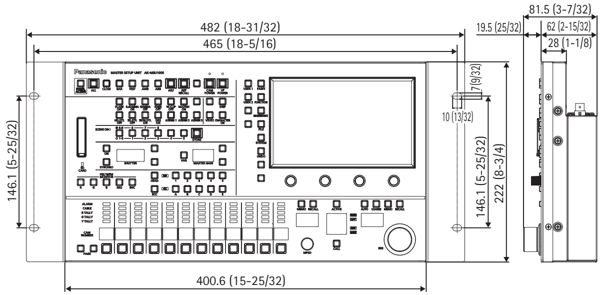
AK-HRP1000GJ



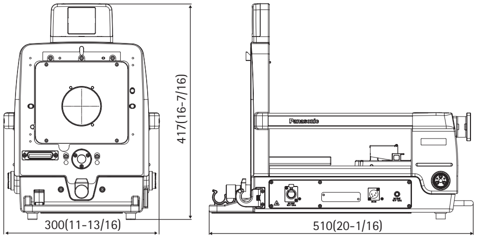
AK-HRP1005GJ



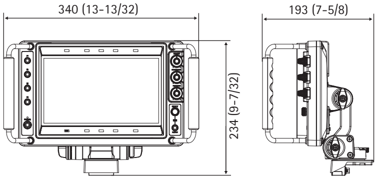
AK-MSU1000GJ



AK-HBU500GJ



AK-HVF100GJ



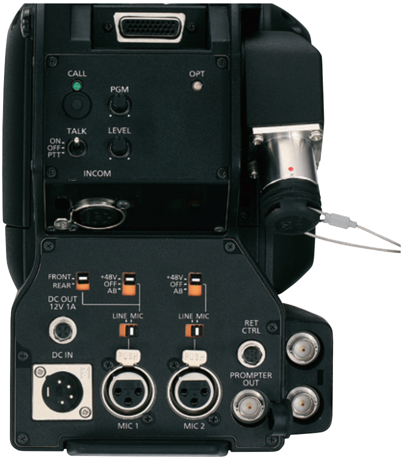
Studio Camera

AK-HC3800G **(Tajimi connector model)**
AK-HC3800GS **(LEMO connector model)**

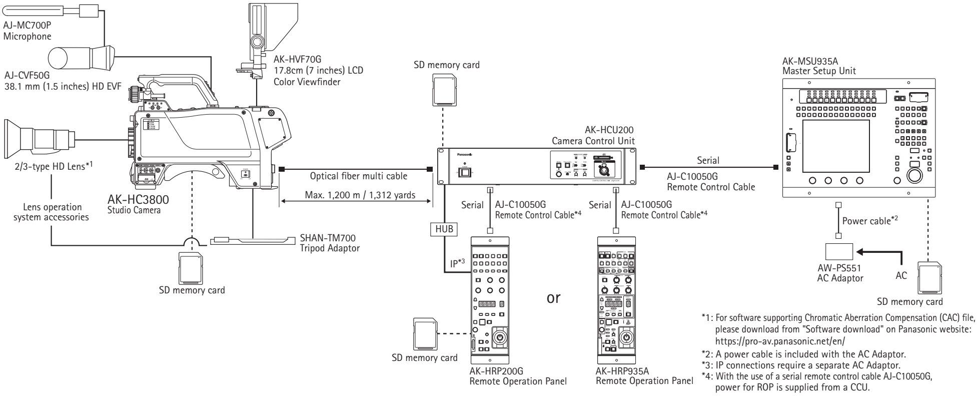
A Studio and EFP Camera System for Broadcast Use That Delivers High-End Image Quality and Enables Long-Distance Optical Fiber Transmission at Low Cost.

- The 2/3 type 2.2 megapixel 3CCD enables the standard sensitivity of F12 (2,000 lx/50 Hz) and F11 (2,000 lx/59.94 Hz) which is one of the highest sensitivity in this range of cameras.
- High-Performance DSP Provides 16 bit A/D, 38 bit Processing.
- For HD, supporting 1080/59.94i, 1080/50i, 1080/23.98p(over59.94i), 25p(over50i) and 1080/29.97p(over59.94i) video format are supported as standard. In addition, 720/59.94p, 720/50p and 1080/23.98PsF video format can also be supported when selected on CCU.
- Chromatic Aberration Compensation (CAC).
  *When a CAC-compatible lens is used.
- Digital Extender (2x). This function expands the image by 2x in the digital signal processing circuit, allowing powerful shooting even with a low-magnification lens.
- 12-axis color correction, linear matrix, and other color correction functions.
- Skin Tone Detail Correction separately reduces the sharpness of two types of color gamut to help tone down wrinkles and dull areas for more beautiful, natural textures. The function can be applied to the entire hue phase (360°), enabling the sharpness of all colors, not just skin tones, to be reduced.
- Selectable gamma curves are included in the DSP circuit. The Film Rec mode produces film tone.
- Scan reverse function is feautured.
- The Dynamic Range Stretch (DRS) function automatically suppresses blocked shadows and blown highlights. A gamma curve and knee slope are applied to match the contrast of each pixel and corrected in real time to maintain excellent gradation for each shade even when a single scene contains dark, bright and intermediate shades.
- ND filter: Clear, 1/4, 1/16, 1/64
- Selectable EBU or NTSC preset matrix.
- Connect the camera to a CCU using multi-mode optical fiber cable to enable high resolution video and multiple signals to be transmitted between the camera and the CCU up to a distance of approximately 1,200 m.
- A lens file function (for up to 32 files) to save flare and shading values.
- Camera settings, such as VF settings, can be saved on an SD memory card. SD memory cards can also be used for firmware upgrades.
- Various information, including the color temperature setting, is displayed in the viewfinder.

Rear View



System Configuration and Interface



[1] *1: For software supporting Chromatic Aberration Compensation (CAC) file, please download from "Software download" on Panasonic website: https://pro-av.panasonic.net/en/

[2] *2: A power cable is included with the AC Adaptor.

[3] *3: IP connections require a separate AC Adaptor.

[4] *4: With the use of a serial remote control cable AJ-C10050G, power for ROP is supplied from a CCU.

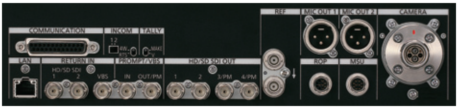
Camera Control Unit (CCU)

AK-HCU200P/HCU200E (Tajimi connector model)
AK-HCU200PS/HCU200ES (LEMO connector model)

Allows a High-Quality, Uncompressed, Long-Distance Optical Fiber Transmission Camera System to Be Configured at Low Cost

- High-Definition, Long-Distance, Optical Digital Transmission. The cable between the camera and the CCU can be extended up to approximately 1,200 m.
- The AK-HCU200 is 59.94 Hz/50 Hz switchable, and supports 1080/59.94i, 1080/50i, 1080/29.97PsF,*[1] 1080/25PsF,*[1] 1080/23.98PsF,*[1] 720/59.94p, and 720/50p HD Multi-formats.
- Two SDI channels and one VBS channel are provided for RET input, and prompter input (analog video signal input) is included as standard.
- Four SDI OUT lines are provided (two support PM output). In addition to HD video signal output, SD downconverted video signal output (SDI, analog composite) comes as standard.
- Multiple AK-HRP200G Remote Operation Panels and up to 19 AK-HCU200 Camera Control Units can be routed through a hub with IP connection.
- The AK-HRP935A Remote Operation Panel or AK-MSU935A Master Setup Unit can also be used for serial remote control of the AK-HCU200 Camera Control Unit.*[2]
- Setting Up CCU with a PC.
- The camera number and other text can be superimposed onto the color bar output signal.
- The SD memory card slot allows CCU setting data to be saved on an SD memory card.
- The 2U height of this compact, lightweight unit allows 2U rack mounting.

Rear View



AK-HC3800G/AK-HC3800GS/AK-HC3500A Common Options

AJ-CVF50G
38.1 mm (1.5 inches) HD EVF

AJ-HVF21KG
50.8 mm (2 inches) HD EVF
59.94 Hz/50 Hz Switchable
Not available in some areas.

AK-HVF100GJ
22.9 cm (9 inch) LCD Color Viewfinder
*External power supply is required when connected to AK-HC3800G/GS/HC3500A.

SHAN-TM700
Tripod Adaptor

AJ-MC700P
Microphone Kit (monaural)

AJ-C10050G
Remote Control Cable
(50 m / 164 feet)

AW-PS551
AC Adaptor

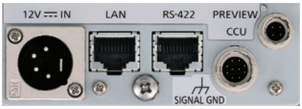
Remote Operation Panel (ROP)

AK-HRP200G

A Compact Operation Panel for Serial Connection and for Controlling up to 19 Cameras with IP Connection

- The AK-HRP200G supports both serial (1:1) and IP connection.*[3] IP connection enables up to 19 cameras to be controlled by a single Remote Operation Panel.
- Five connection modes are provided: CCU Serial, CCU IP, Remote Camera Serial, Remote Camera IP and Camera Recorder IP.
- The menu can be displayed on a monitor connected to the Camera Control Unit, so detailed camera settings can be made by operating the Remote Operation Panel.
- The joystick control lever enables fine manual iris/pedestal operation.
- Scene files and user files can be saved on an SD memory card.
- The unit is compact, with a width of 92 mm and a 6U height for easy rack mounting.

Rear View



17.8 cm (7 inch) LCD Color Viewfinder

AK-HVF70G

Can also be used with the AK-HC3500AP/AES/AE.

Light Weight, Low Power Consumption,and High Resolution Plus Focus Assist Functions

- The compact, lightweight viewfinder weighs only about 1.6 kg (3.5 lb) (excluding hood, hood weights approx. 200 g (0.44 lb)). Thanks to the LCD panel, the power consumption is only 10W.
- This high-resolution, 17.8 cm (7 inches) color LCD panel displays 1024 pixel x 600 pixel (WSVGA) images. Its wide viewing angle extends to 130 degrees vertically and 160 degrees horizontally (contrast >10:1). Displays approximately 16,200,000 colors.
- The Focus-in-Red function emphasizes the image parts that are in focus by marking their edges in red, and the Pixel-to-Pixel function displays an enlarged image without resizing.

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*1: The 1080/29.97PsF, 1080/25PsF and 1080/23.98PsF formats must be selected at the camera. *2: Only functions that are supported by the CCU can be controlled by the AK-MSU935A or AK-HRP935A. *3: External power supply (DC 12 V) required when LAN cable is used. Power is supplied by the Camera Control Unit in serial connection.

Studio Camera System Specifications & Dimensions

AK-HC3800G/HC3800GS

Power Supply	12 V DC (during external power supply operation) 190 V DC (when CCU is connected)
Power Consumption	25 W (during external power supply operation, camera only) 53 W (maximum power during external power supply operation when maximum power supplied for each output connector while all accessories are connected) 60 W (maximum power when CCU is connected and maximum power supplied for each output connector while all accessories are connected)
Operating Temperature	–10 °C to 45 °C (14°F to 113°F) Preheating required at temperatures below 0°C (32°F)
Storage Temperature	–20 °C to 60 °C (–4°F to 140°F)
Operating Humidity	10 % to 85 % (no condensation)
Weight	Approx. 3.7 kg (approx. 8.16 lb)
Dimensions (W x H x D)	135 mm x 260 mm x 367.5 mm (5-5/16 inches x 10-1/4inches x 14-7/16 inches) excluding protrusions
Pickup Device	2/3 type 2.2 million pixel IT, CCD x 3
System	GBR pickup system
Color Separation Optical system	f/1.4 prism
Optical Filter	ND: Clear, 1/4, 1/16, 1/64
Lens Mount	Bayonet type
Output standard	SMPTE 292M
Sensitivity	F11 (59.94 Hz) F12 (50 Hz)
Horizontal Resolution	1100 TV lines
S/N	60 dB or higher
Output Format	1080/59.94i, 1080/50i, 1080/23.98p(over59.94i), 25p(over50i), 1080/29.97p(over59.94i), 720/59.94p*1, 720/50p*1, 1080/23.98PsF*1
Horizontal Frequency	33.716 kHz, 1125 line frame (59.94 Hz) 28.125 kHz, 1125 line frame (50 Hz)
Vertical Frequency	59.94 Hz or 50 Hz, interlace
MIC Input	–60 dBu to 4 dBu (XLR 3-pin female x 2) Gain selected by camera menu
Intercom	XLR 5-pin female x 1 Input: -60 dBu to -20 dBu Output: 100 mW max.
HD-SDI Output	BNC x 2 (HD-SDI 1/HD-SDI 2) HD signal = 0.8 V [p-p], 75 Ω The HD-SDI 2 signal output can be added to the regular images using the camera menu item setting and switched to the VF or RET image output.
Prompter Output	BNC x 1, VBS signal = 1.0 V [p-p], 75 Ω
DC OUT	12 V, MAX. 1A
RET CONTROL Terminal	Round 6 pin x 1
VF	Round 20 pin x 1, D-Sub 29 pin x 1
Power Switching	CCU, OFF, EXT
USER 1/2/3	Functions specified by menu items can be assigned to the switch.
RET A/B Selection	For selecting the return signal
RET/PTT Switching	RET, PPT
Output Selection*2	CAM, BAR, TEST
White Balance Mode*2	A, B, preset
Shutter Speed Selection*2	59.94 Hz: 1/48 (23.98p), 1/60 (23.98p, 29.97p), 1/100, 1/120, 1/125, 1/250, 1/500, 1/1000, 1/1500, 1/2000 50 Hz: 1/50 (25p), 1/60, 1/100, 1/125, 1/250, 1/500, 1/1000, 1/1500, 1/2000
Intercom	MIC ON/OFF, receiving level, or PGM level
MIC Setting	MIC power, MIC gain, MIC1 selection

*1: The 720/59.94P, 720/50P and 1080/23.98PsF formats must be selected at the CCU.
*2: When the CCU is connected, the selection functions cannot be used. Control is performed from the ROP.

* When IP connection, 1080/29.97sF, 1080/50PsF, 720/59.94p, and 720/50p format are used, you may need to update AK-HC3800 firmware. For details, see the Panasonic website. https://pro-av.panasonic.net/

AK-HCU200P/E/PS/ES

Power Supply	100 V to 240 V AC, 50Hz/60 Hz
Power Consumption	170 W (Without CAMERA connected: 32 W)
Capacity for Supplying Power to a Camera	190 V DC, 0.6 A
Operating Temperature	0 °C to 40 °C (32 °F to 104 °F)
Operating Humidity	10 % to 90 % (no condensation)
Weight	Approx. 6.6 kg (approx. 14.6 lb)
Dimensions (W x H x D)	424 mm x 88 mm x 400 mm (16-11/16 inches x 3-7/16 inches x 15-3/4 inches) Excluding protrusions
Video Output	HD-SDI/SD-SDI: 4 lines (2 lines shared with picture monitor output*3) Analog composite: 1 line (1 line shared with picture monitor output*3)
Output Format	1080/59.94i, 1080/50i, 1080/29.97PsF*4, 1080/25PsF*4, 1080/23.98PsF*4, 720/59.94p, 720/50p
Return Input	HD-SDI/SD-SDI: 2 lines (switched depending on the setting) VBS: 1 line
Prompter Input	1 line, Analog composite
Reference Input	1 line (1 loop-through line) Black burst/tri-level*5
Microphone Output	2 lines (XLR, 3-pin, male), 0 dBm/600 Ω
Intercom	XLR, 5-pin, female Input: –55 dBu to –10 dBu Output: 100 mW (max.)
COMMUNICATION	Intercom input/output: 2 lines (1/2*3) (0 dBm, 600 Ω, RTS/4W*3) PGM: 1 line, input (0 dBm/600 Ω) Tally input: Red, Green, 1 input each
ROP interface	RS-422, 1 line, 12 V output
MSU interface	RS-422, 1 line, GPI for control
LAN port	1 line (8-pin, RJ45)

*3: Depending on the setting, only one of them can be selected at one time.
*4: The 1080/29.97PsF, 1080/25PsF and 1080/23.98PsF formats must be selected at the camera.
*5: The black burst signal and tri-level sync signal of the reference input are recognized automatically.

AK-HRP200G

Power Supply	12 V DC
Power Consumption	4.2 W
Operating Temperature	0 °C to 40 °C (32 °F to 104 °F)
Storage Temperature	–20 °C to 60 °C (–4 °F to 140 °F)
Operating Humidity	90 % or less
Weight	Approx. 1.3 kg (approx. 2.87lb)
Dimensions (W x H x D)	92 mm x 308 mm x 55 mm (3-5/8 inches x12-1/8 inches x 2-3/16 inches) excluding protrusions
CCU Control	• Control signals (camera, CCU control) • Power supply (12 V DC)*6 • Tally control signal
PREVIEW control	Contact output
Maximum cable length	50 m (164 ft)

*6: Can be provided from CCU or AC Adaptor

AK-HVF70G

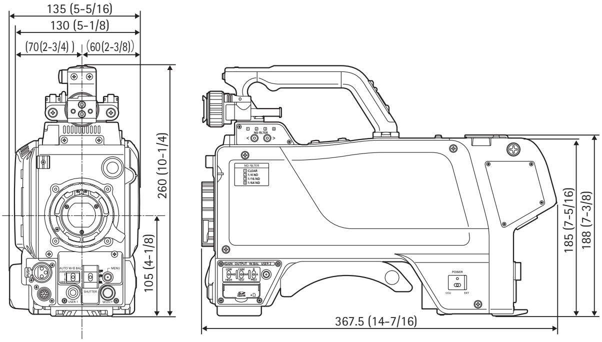
Power Supply	DC 12 V (supplied by the camera)
Power Consumption	10 W
Operating Temperature	0 °C to 45 °C (32 °F to 113 °F)
Storage Temperature	–20 °C to 60 °C (–4 °F to 140 °F)
Operating Humidity	10% to 85% (no condensation)
Weight	Approx. 1.6 kg (approx. 3.53 lb) (without hood)
Dimensions (W x H x D)	243.5 mm x 212 mm x 172 mm (9-19/32 inches x 8-11/32 inches x 6-25/32 inches) (with hood attached) 243.5 mm x 212 mm x 85 mm (9-19/32 inches x 8-11/32 inches x 3-11/32 inches) (without hood)
Panel Size	177.8 mm (7.0 inches)
Number of Pixels	1024 pixel x 600 pixel (WSVGA)
Display Colors	Approx. 16,200,000 colors
Operation Panel	POWER switch x 1, MENU button x 1 SELECT dial x1, Function buttons x 3 Picture adjusting knobs x 3 ([BRIGHT], [CONTRAST], [PEAKING])
Connectors	Camera I/F connector (D-Sub 29-pin x 1)

Weight and dimensions are approximate.
Specifications are subject to change without notice.

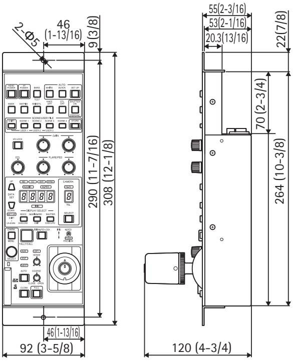
Dimensions

Unit: mm(inches)

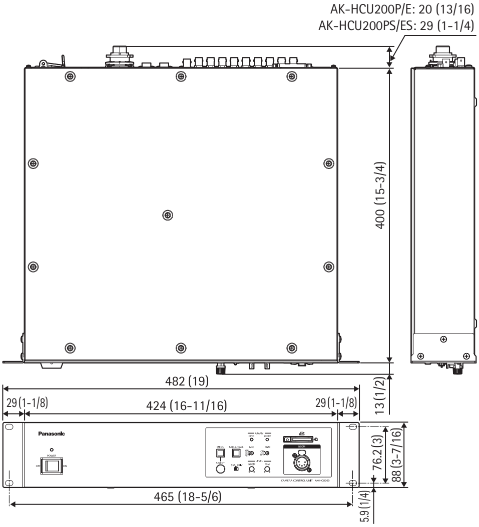
AK-HC3800G/HC3800GS



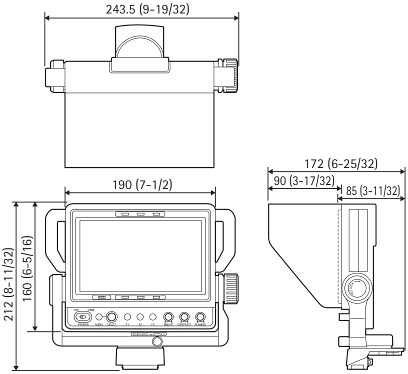
AK-HRP200G



AK-HCU200P/E/PS/ES



AK-HVF70G



Studio Camera

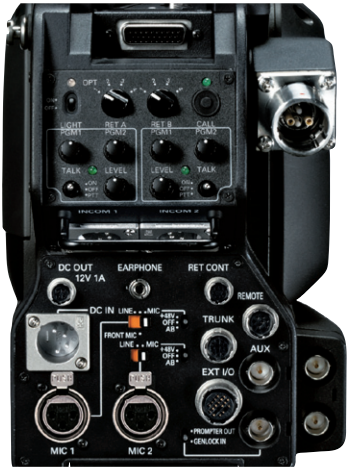
AK-HC3500AP / AK-HC3500AES (LEMO connector model)
AK-HC3500AE (Tajimi connector model*)

*This model is not available in some areas.

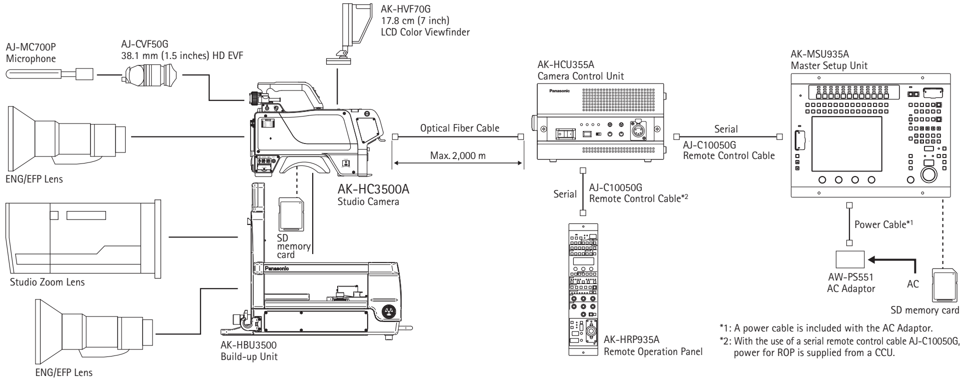
High Performance HD Camera System with Optical Fiber Transmission Capability

- The 2/3 type 2.2-megapixel 3CCD enables standard sensitivity of F11 (2,000 lx/50 Hz), F10 (2,000 lx/59.94 Hz), which is one of the highest levels in this camera range.
- Supports the HD formats of 1080/59.94i, 1080/50i, 1080/29.97p (over 59.94i), 1080/23.98p (over 59.94i)*, and 1080/25p (over 50i).
  *The AK-HCU355A enables conversion to 1080/23.98p (over 47.96i).
- High-Performance DSP Provides 16 bit A/D, 38 bit Processing.
- The Dynamic Range Stretch (DRS) function automatically suppresses blocked shadows and blown highlights. A gamma curve and knee slope are applied to match the contrast of each pixel and corrected in real time to maintain excellent gradation for each shade even when a single scene contains dark, bright and intermediate shades.
- Selectable gamma curves are included in the DSP circuit. Five modes including the Film Rec mode which produces film tone, Video Rec mode and Film-like 1/2/3.
- The 12-axis color correction function allows precise and independent hue and saturation adjustment of individual colors.
- The EBU or NTSC preset color correction matrix can be selected.
- Skin Tone Detail Correction separately reduces the sharpness of two types of color gamut to help tone down wrinkles and dull areas for more beautiful, natural textures. The function can be applied to the entire hue phase (360°), enabling the sharpness of all colors, not just skin tones, to be reduced.
- Enhanced DTL signal processing ensures superb picture quality with minimal noise in horizontal and vertical directions, as well as in the image's dark and brightly lit areas.
- When mounting onto an optional Build-up Unit, a mechanism enlarges the internal diameter of the lens mount.
- Internal motor driven filters for shooting in variable lighting conditions and color temperatures.
  [CC filter] 3200K, 4300K, 6300K, Cross, Diffusion
  [ND filter] CAP, Through, 1/4, 1/16, 1/64
- Connect the camera to a CCU using multi-mode optical fiber cable to enable high resolution video and multiple signals to be transmitted uncompressed between the camera and the CCU up to a distance of approximately 2,000 m. Operating convenience is further assured by the movable connector.
- Two lines of data trunk are provided (select between RS-422 and RS-232C) to support virtual systems, etc.
- A lens file function (for up to 32 files) to save flare and shading values.
- Using an SD Memory Card enables storage and retrieval of various camera settings, such as user viewfinder indications.

Rear View



System Configuration and Interface



*1: A power cable is included with the AC Adaptor.

*2: With the use of a serial remote control cable AJ-C10050G, power for ROP is supplied from a CCU.

Camera Control Unit (CCU)

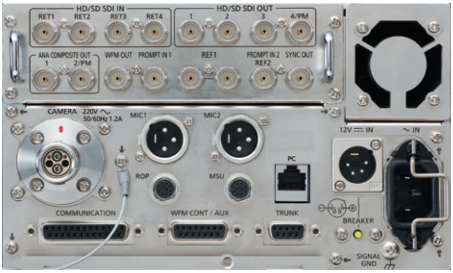
AK-HCU355AP/AK-HCU355AES (LEMO connector model)
AK-HCU355AE (Tajimi connector model*)

*This model is not available in some areas.

Portable Half-rack Size. High-Quality Optical Fiber Transmission, and Camera Power Supply.

- The AK-HC3500A can be connected to a Camera Control Unit (CCU) via an optical fiber cable. High-quality images and signals can be transmitted even when the cable length between the camera and the CCU is up to about 2,000 m. Operating convenience is further assured by the movable connector.
- Standard video output: HD-SDI, SD-SDI, SD composite.
- With a tub, two units of the CCU can be mounted together in a 3U rack size.
- Text display of BAR ID, output source for color bar images, etc.
- Two prompter inputs are provided as a standard feature. (One input when dual sync is used.)
- Four HD/SD-SDI return inputs are provided.
- DC (12V) power drive. (When the camera is driven by a DC power supply.)
- The large power supply enables 200 VA to be taken from the utility power supply of the Build-up Unit. (The power supplied varies depending on the length of the optical fiber cable.)
- Two lines of data trunk are provided (selectable from RS-422/ RS-232C). No cables required to control virtual system, pan/tilt camera head, or lens.

Rear View



Build-up Unit

AK-HBU3500

*This model is not available in some areas.

Supports Large, High-Power Lenses

Master Setup Unit (MSU)

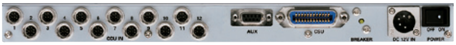
AK-MSU935A

Can also be used with the AK-HC3800G/GS*1.

With a large LCD control panel, the MSU can adjust all of the camera's parameters, serving up to 12 camera systems.

- Master control of precise camera settings for the entire camera system (up to 12 camera systems)
- Switch between external monitor and waveform monitor.
- Large-scale (16-cm/6.3-inch) LCD display
- SD Memory Card slot for storing/retrieving three user references, eight scene files, and sixteen lens files.

Rear View



* Optional AC Adaptor is required.

Remote Operation Panel (ROP)

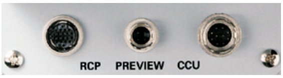
AK-HRP935A

Can also be used with the AK-HC3800G/GS*1.

The 1/4 rack size Remote Operation Panel can easily adjust camera parameters.

- Full control of camera settings
- 1/4 rack size Remote Operation Panel

Rear View



*1: Serial connection only.

AK-HC3500AP/AES/AE

Power Supply		DC 12 V (during external power supply operation) AC 220 V (when CCU is connected)
Power Consumption		AK-HC3500AP: 32W (during external power supply operation) 34W (when CCU is coneected) AK-HC3500AE/AK-HC3500AES: 28W (during external power supply operation) 70W (when CCU is coneected)
Operating Temperature		–10 °C to 45 °C (14°F to 113°F) Preheating required at temperatures below 0°C (32°F)
Operating Humidity		Less than 85 %
Storage Temperature		–20 °C to 60 °C (–4°F to 140°F)
Weight		Approx. 4.7 kg (approx. 10.36 lb)
Dimensions (W x H x D)		135 mm x 260 mm x 360 mm (5-5/16 inches x 10-1/4inches x 14-3/16 inches) excluding protrusions
Pickup Device		2/3 type 2.2 million pixel IT, CCD x 3
System		GBR Pickup System
Color Separation Optical system		f/1.4 prism
CC Filter		3200 K, 4300 K, 6300 K, Cross, Diffusion
ND Filter		CAP, Through, 1/4, 1/16, 1/64
Lens mount		Bayonet mount
Sensitivity	59.94 Hz	F10 (2000 lx, 3200 K, 89.9 %)
	50 Hz	F11 (2000 lx, 3200 K, 89.9 %)
S/N		60 dB (typ) (Y: 30 MHz)
Horizontal modulation		More than 50 % (27.5 MHz)
Output Format		1080/59.94i, 1080/50i, 1080/29.97p (over 59.94i), 1080/25p (over 50i), 1080/23.98p (over 59.94i)
HD-SDI Output		HD signal = 0.8 V [p-p], 75 Ω (BNC) The HD-SDI 2 signal output can be added to the regular images using the camera menu item setting and switched to the VF or RET image output. Embedded audio supported (MUTE when RET Video output)
PROMPT Output GENLOCK Input		VBS signal = 1 V [p-p], 75 Ω (BNC) Tri-level SYNC/BB (BNC x 1) The PROMPT output and the GENLOCK input are changed with the switch.
AUX Output		Prompt2 Output: VBS Signal = 1 V [p-p], 75 Ω (BNC) (When there is Prompt2 input in CCU)
MIC Input		–60 dBu to 4 dBu (XLR 3-pin female x 2) Gain selected by camera menu
Intercom		Input: –60 dBu to –10 dBu Output: 100 mW max. (XLR 5-pin, female x 2) (The mix of PGM1 and PGM2 is individually controlled)
DC OUT		12 V, MAX. 1 A

AK-HBU3500

Power Supply	AC 220 V, 50Hz/60 Hz (Supplied from the Studio Camera)
Power Consumption	20 W (main unit only) 200W (with large lens, viewfinder and maximum load condition of AC outlet)
Operating Temperature	–10 °C to 45 °C (14 °F to 113 °F)
Operating Humidity	Less than 85 %
Weight	Approx. 14.5 kg (Approx. 32.0 lb)
Dimensions (W x H x D)	300 mm x 417 mm x 510 mm (11-13/16 inches x 16-7/16 inches x 20-1/16 inches)
Adjustment Functions	H-POSI, V-POSI, WIDTH, HEIGHT, 4:3 brightness adjustment level
Switch Functions	AC outlet reset, Viewfinder power, Up tally ON/OFF, Center maker, Cursor memory 1, Cursor memory 2, 4:3 marker, ND filter selection, Local, CC filter selection, Menu ON/OFF, Menu JOG, Return A switch, Return B switch, User, Viewfinder detail, Monitor output selection, P in P function ON/OFF, P in P position selection (functions not available with the AK-HC3500A)

*This model is not available in some areas.

AK-HCU355AP/AES/AE

Power Supply	DC 12 V AC 100 V to 120 V, 50 Hz/60 Hz (AK-HCU355AP) AC 220 V to 240 V, 50 Hz/60 Hz (AK-HCU355AES/355AE)
Power Consumption	37 W (excluding power supply) 340 W (include power supply)
Capacity for Supplying Power to a Camera	AC 220V to 240 V, 1.2 A, 50 Hz/60 Hz (AK-HCU355AP) AC 220V to 240 V, 1.2 A, 50 Hz/60 Hz (AK-HCU355AES/355AE)
Operating Temperature	0 °C to 40 °C (32 °F to 104 °F)
Operating Humidity	10 % to 90 % (no condensation)
Weight	Approx. 9 kg (Approx. 19.8 lb)
Dimensions (W x H x D)	200mm x 120 mm x 445 mm (7-7/8 inches x 4-3/4 inches x 17-9/16 inches) excluding protrusions
Video Output	HD-SDI/SD-SDI x 4 lines[*1] (shared by picture monitor output 1 line[*4]) Analogue composite x 2 lines (shared by picture monitor output 1 line[*4])
WFM Output	Analogue composite x 1 line[*2]
Return Input	HD-SDI/SD-SDI x 4 lines
Prompter Input	Analogue composite x 2 lines[*2]
Reference Input	Black burst/tri-level x 2 lines (loop-through x 1 line)[*2 *3 *5]
Sync Output	Analogue sync, HD (±0.3 V [p-p]) / SD (1 V [p-p]) (with 75 Ω termination) x 1 line[*4]
Mic Output	0 dBm/600 Ω x 2 lines
Communication	Intercom input/output(0 dBm, 600 Ω, 2W/RTS/4W[*4]) x2 lines (ENG/PROD) PGM input (0 dBm/600 Ω) x 2 lines Tally input (Red, Green) x 1 line each
WFM CONT	For WFM control (open collector output)
AUX	For setting down-conversion system (photo-coupler input) For tally, alarm (open collector output)
TRUNK	RS-422/RS-232C x 2 lines[*4]
ROP I/F	RS-422 x 1 line, 12 V output
MSU I/F	RS-422 x 1 line, GPI for control
LAN	For use with PC connections x 1 line (10Base-T, 100Base-TX: Cross cable)

AK-MSU935A

Power Supply	DC 12 V
Power Consumption	15 W
Operating Temperature	0 °C to 40 °C (32 °F to 104 °F)
Operating Humidity	Less than 80 %
Weight	Approx. 3.25 kg (Approx. 7.2 lb)
Dimensions (W x H x D)	340 mm x 75 mm x 264 mm (13-3/8 inches x 2-15/16 inches x 10-3/8 inches)
Switch Functions	Camera selection, MODE ON/OFF (5600 K, Flare OFF, Black gamma ON, Gamma OFF, Knee OFF, White clip OFF, HD matrix ON, PM character display, HDTV detail OFF, SDTV detail off, HDTV skin tone detail ON, SDTV skin tone detail ON), Control item selection (UNDO, Black shading selection, White shading selection, R/G/B shading, Matrix control, FUNC, System, Pedestal control, Gain control, Gamma curve control, Flare control, Knee/White clip control, HD detail control, SDTV detail), ALL, Reference, Camera video output selection, Automatic adjustment (Auto white balance, Auto black balance, Auto setup), Monitor selection, Scene files, SHUTTER, Gain selection, Filter selection (HEAD, ND filter, CC filter), CALL, Auto iris, Iris active, Master pedestal storage, Master pedestal file call
Adjustment Functions	Iris, Master pedestal
CCU control	RS-422 compliant
Camera (CCU) connection	Control up to 12 cameras

AK-HRP935A

Power Supply	DC 12 V (DC 10V to 17V) (supplied from CCU)
Power Consumption	Approx. 6 W
Operating Temperature	0 °C to 40 °C (32 °F to 104 °F)
Operating Humidity	Less than 80 %
Weight	Approx. 1.85 kg (Approx. 4.1 lb)
Dimensions (W x H x D)	92 mm x 419 mm x 55 mm (3-5/8 inches x 16-1/2 inches x 2-3/16 inches) excluding protrusions
CCU Control	Control signals (camera, CCU control) RS-422 compliant
Maximum Cable Length	50 m (164 ft)

*1: Embedded audio is supported only for HD signal output.

*2: Prompter input 2 and reference input 2 share the same connector so only one of these inputs can be selected at one time.

*3: The black burst signal and tri-level sync signal of reference input 1 are recognized automatically.

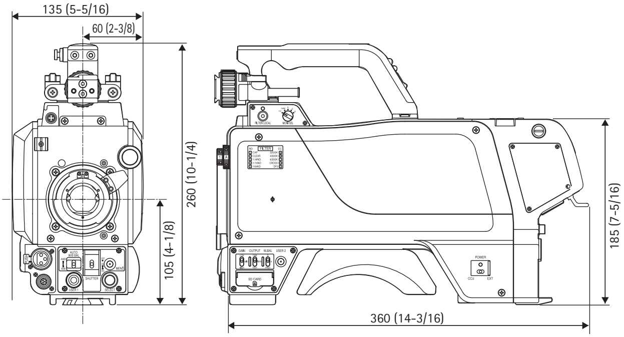
*4: Depending on the setting, only one of these outputs can be selected at one time.

*5: Reference input 2 supports only dual sync tri-level sync signal input when the 23.98PsF format applies.

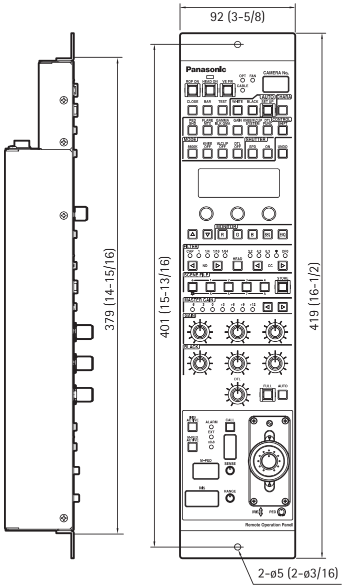
Dimensions

Unit: mm(inches)

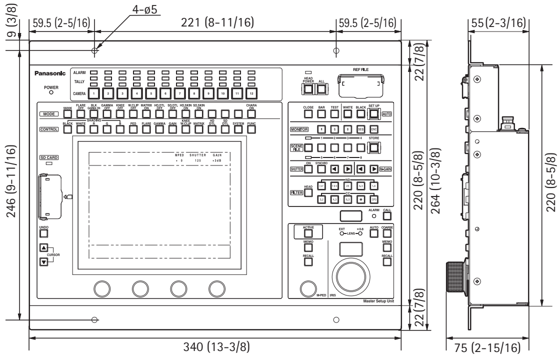
AK-HC3500AP/AES/AE



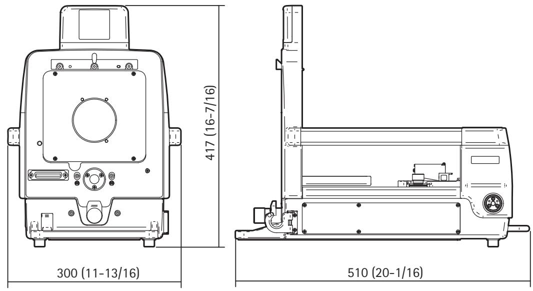
AK-HRP935A



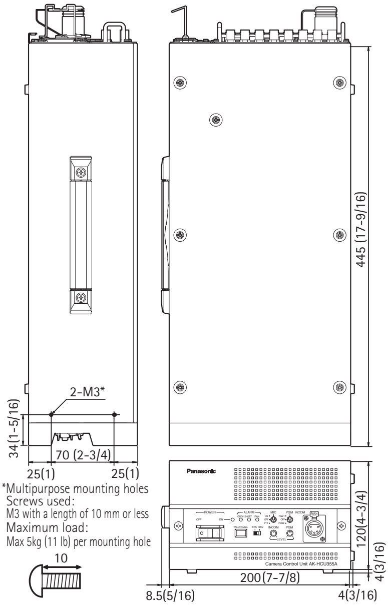
AK-MSU935A



AK-HBU3500



AK-HCU355AP/AES/AE



*Multipurpose mounting holes
Screws used:
M3 with a length of 10 mm or less
Maximum load:
Max 5kg (11 lb) per mounting hole

4K / HD Integrated Camera / NDI|HX Compatible 4K / HD Integrated PTZ Camera

For indoor use

AW-UE70W
AW-UN70W NEW

AW-UE70K
AW-UN70K NEW

1/2.3-type MOS
20x optical zoom
Digital Zoom/i.Zoom
DRS/DNR/HDR
OIS
PoE+
IP control
4K/HD image IP transmission
Up to 100 presets
Audio Input
USB Video Class
MicroSD Card Recording

Integrated pan-tilt 4K cameras able to output 4K video via HDMI, USB, and IP transmission

- In addition to HDMI, SDI and USB output, production quality 4K/full HD video output via IP transmission is supported.
- With the four-drive lens system, three zoom lenses and one focus lens are driven independently and simultaneously.
- With PoE+[*1], power can be supplied via LAN cable so installation costs can be reduced.
- Supports remote camera control using an IP control browser. It can be operated from not only a PC but also a MAC or mobile terminals.
- For SDI/HDMI output, 2160/29.97p (HDMI only), 2160/25p (HDMI only), 1080/59.94p, 29.97p, 59.94i, 29.97PsF, 1080/50p, 25p, 50i, 25PsF, 720/59.94p, and 50p video formats are supported.
- Optical (FHD, 4K)/4-axis Hybrid Image Stabilizer (FHD) for stable shooting.
- High Dynamic Range (HDR) mode corrects for halation and black defects.
- Shooting in low-light conditions is possible using Night Mode which supports automatic switching.
- In addition to a 20x optical zoom, the AW-UE70W/K and AW-UN70W/K can zoom up to 30x (22x when in 4K mode) while maintaining high resolution thanks to Super Resolution technology.
- The Freeze During Preset function enables to freeze the video during preset playback.
- In addition, using an IP network, it is possible to externally control recording start/stop and transmit recorded files to an FTP server.
- The AW-UN70W/K is a NDI I HX compatible model. It enables high-quality video to be encoded and transmitted in real-time and input signals to be directly sent to a switcher without the need for an IP decoder.
- The AW-UE70W/K can be upgraded to NDI I HX by purchasing a license[*2].

For indoor use

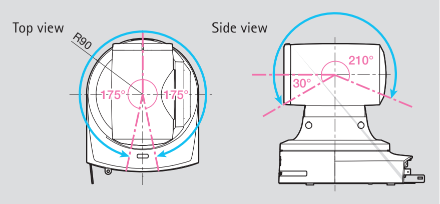
AW-HE130W
AW-HN130W NEW

AW-HE130K
AW-HN130K NEW

1/2.86-type 3MOS
20x optical zoom
Digital Zoom
DRS/Hybrid DNR
OIS
PoE+
IP control
HD image IP transmission
Up to 100 presets
Audio Input

Integrated pan-tilt full-HD cameras supporting IP transmission output of full HD images

- In addition to HD-SDI and HDMI output, IP transmission of full-HD video output and multi-streaming output are supported.
- Transmit IP video without a separate encoder reduces cost and simplifies installation.
- With PoE+[*1], power can be supplied via LAN cable so installation costs can be reduced.
- Supports remote camera control using an IP control browser. It can be operated from not only a PC but also a MAC or mobile terminals.
- Supports HD/SD multi-format including 1080/29.97p[*3], 25p[*3], and 23.98p[*4].
- Equipped with 1/2.86-type full HD 3MOS sensors and DSP (Digital Signal Processor). Achieves high sensitivity, a high S/N ratio and high resolution through the use of advanced video processing.
- Optical Image Stabilization System (OIS) and 1.4x Digital Extender Zoom.
- Independent Color Correction Function with 12-axis Color + 3-axis Skin Tone and Color Temperature Adjustment Mode.
- Shoot clearer video with Hybrid Digital Noise Reduction (Hybrid DNR).
- Equipped with Night Mode for infrared shooting.
- The Freeze During Preset function enables to freeze the video during preset playback.
- The AW-HN130W/K is a NDI I HX compatible model. It enables high-quality video to be encoded and transmitted in real-time and input signals to be directly sent to a switcher without the need for an IP decoder.
- The AW-HE130W/K can be upgraded to NDI I HX by purchasing a license[*2].



As of April, 2018

For indoor use

AW-HE40SW [SDI Model]
AW-HE40HW [HDMI Model]
AW-HN40HW [HDMI Model] NEW

AW-HE40SK [SDI Model]
AW-HE40HK [HDMI Model]
AW-HN40HK [HDMI Model] NEW

1/2.3-type MOS	30x optical zoom	Digital Zoom/i.Zoom
DRS/DNR/HDR	PoE+	IP control
HD image IP transmission	Up to 100 presets	Audio Input
USB Video Class	MicroSD Card Recording	

Integrated pan-tilt full-HD cameras with excellent operability and installation flexibility

- In addition to HD-SDI (AW-HE40SW/SK) and HDMI (AW-HE40HW/HK, AW-HN40HW/HK) output, IP transmission full HD video output and multi-streaming output are supported.
- With PoE+*1, power can be supplied via LAN cable so installation costs can be reduced.
- Supports remote camera control using an IP control browser. It can be operated from not only a PC but also a MAC or mobile terminals.
- Supports 1080/59.94p (HDMI model only), 29.97p*3, 59.94i, 29,97PsF, 1080/50p (HDMI model only), 25p*3, 50i, 25PsF, 720/59.94p, and 50p video formats.
- High Dynamic Range (HDR) mode corrects for halation and black defects.
- Shooting in low-light conditions is possible using Night Mode, which supports automatic switching.
- With i.Zoom, the AW-HE40 series and AW-HN40HW/HK can zoom up to 40x while maintaining high resolution.
- The Freeze During Preset function enables to freeze the video during preset playback.
- In addition, using an IP network, it is possible to externally control recording start/stop and transmit recorded files to an FTP server.
- The AW-HN40HW/HK is a NDI I HX compatible model. It enables high-quality video to be encoded and transmitted in real-time and input signals to be directly sent to a switcher without the need for an IP decoder.
- The AW-HE40 series can be upgraded to NDI I HX by purchasing a license*2.

For indoor use

AW-HE38HW NEW
AW-HN38HW NEW

AW-HE38HK NEW
AW-HN38HK NEW

1/2.3-type MOS	22x optical zoom	Digital Zoom/i.Zoom
DRS/DNR/HDR	PoE+	IP control
HD image IP transmission	Up to 100 presets	Audio Input
USB Video Class	MicroSD Card Recording	

Full HD camera with integrated pan-tilt for lectures, meetings and a wide variety of applications.

- In addition to HDMI output, IP transmission of full-HD video output and multistreaming output are supported.
- With PoE+*1, power can be supplied via LAN cable so installation costs can be reduced.
- Supports remote camera control using an IP control browser. It can be operated from not only a PC but also a MAC or mobile terminals.
- Supports 1080/59.94p, 50p, 59.94i, 50i, 29.97p, 25p, 29,97PsF, 25PsF, 720/59.94p, and 50p video formats.
- High Dynamic Range (HDR) mode corrects for halation and black defects.
- Shooting in low-light conditions is possible using Night Mode, which supports automatic switching.
- With i.Zoom, the AW-HE38HW/HK and AW-HN38HW/HK can zoom up to 30x while maintaining high resolution.
- The Freeze During Preset function enables to freeze the video during preset playback.
- In addition, using an IP network, it is possible to externally control recording start/stop and transmit recorded files to an FTP server.
- The AW-HN38HW/HK is a NDI I HX compatible model. It enables high-quality video to be encoded and transmitted in real-time and input signals to be directly sent to a switcher without the need for an IP decoder.
- The AW-HE38HW/HK can be upgraded to NDI I HX by purchasing a license*2.

Option

Wireless remote control
AW-RM50G
("AA", "R6" or "LR6" battery x 2 are not included.)

*For AW-UE70W/K, AW-UN70W/K, AW-HE130W/K, AW-HN130W/K, AW-HE40 series, AW-HN40HW/HK, AW-HE38HW/HK and AW-HN38HW/HK

Direct Ceiling Mount Bracket
WV-Q105A

*ForAW-UE70W/K, AW-UN70W/K, AW-HE130W/K, AW-HN130W/K, AW-HE40 series, AW-HN40HW/HK, AW-HE38HW/HK, AW-HN38HW/HK and AW-HEA10W/K

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*1: Abbreviation of Power over Ethernet Plus. *2: NDI I HX can be upgraded by purchasing a license from the Panasonic website (https://pro-av.panasonic.net/en/ndihx_support/). The following models require a software upgrade: (AW-UE70W/K models with software version 1.37 or earlier/AW-HE130W/K models with software version 2.22 or earlier/AW-HE40 series models with software version 1.67 or earlier/AW-HE38HN/HK models with software version 1.67 or earlier) Contact your local Panasonic vendor for further information. *3: Native output. *4: Over 59.94i.

- NDI|HX, a technology of NewTek, Inc.

For outdoor use

IP65

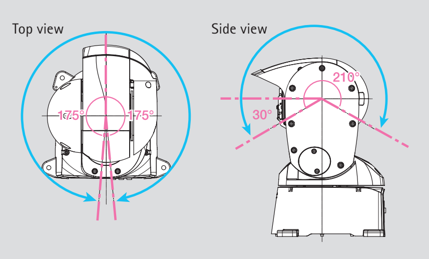
Full-HD Outdoor Integrated Camera

AW-HR140

1/2.86-type 3MOS	20x optical zoom	Digital zoom	
DSP	D.I.S.S.	PoE++*1	IP control
HD image IP transmission	Up to 100 presets	Audio Input	

Outdoor integrated pan-tilt full HD camera with high sensitivity, high S/N ratio, and high resolution

- In addition to HD-SDI output, IP transmission full HD video output and multi-streaming output are supported.
- With PoE++*1, power can be supplied via LAN cable so installation costs can be reduced.
- Supports 1080/59.94p, 1080/50p, 1080/59.94i, 1080/50i, 1080/29.97p*2, 1080/25p, 1080/23.98p*3, 1080/29.97PsF, 1080/25PsF, 1080/23.98PsF, 720/59.94p, and 720/50p video formats.
- Equipped with 1/2.86-type full HD 3MOS sensors and DSP (Digital Signal Processor). Achieves high sensitivity, a high S/N ratio and high resolution through the use of advanced video processing.
- Dynamic Image Stabilizing System (D.I.S.S.) simultaneously reduces both large, slow swings and small, quick vibrations.
- Equipped with intelligent automatic adjustment functions for white balance, gain, etc.
- Equipped with a newly developed haze reduction function.
- Oval shape reduces air resistance and tough aerodynamic form resists adhering of snow and dirt.
- IP65 water and dust resistance, wipers as standard equipment, and salt-resistant paint support installation in severe environments.
- Shooting in low-light conditions supported using Night Mode.
- Freeze During Preset function enables freezing of the video during preset playback.



For indoor use

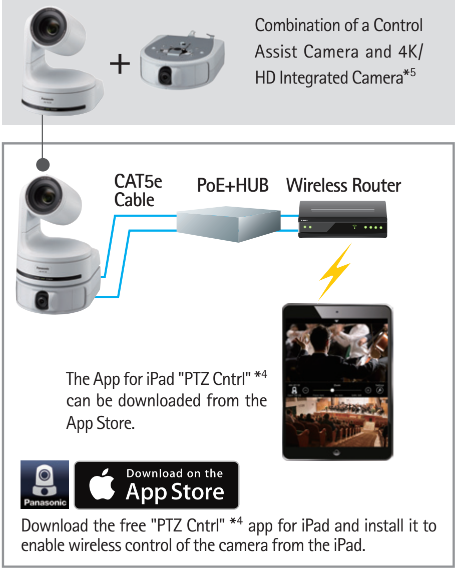
Control Assist Camera

AW-HEA10W AW-HEA10K

Wireless control from iPad*4 for pan, tilt and zoom of an 4K/HD Integrated Camera*5

- AW-HEA10W/K Control Assist Camera and 4K/HD Integrated Camera*5 used in combination.
- 95° wide-angle view is captured by the Control Assist Camera and displayed on an iPad*4.
- Tapping the desired area of the 95° wide-angle image displayed on the iPad*4 to turn the 4K/HD Integrated Camera*5 to capture the tapped position.
- Thus, controlling, panning, tilting and zooming the 4K/HD Integrated Camera*5 are simple and intuitive.
- Allows up to 9 presets.
- Allows up to 100 sets of Control Assist Camera and 4K/HD Integrated Camera can be connected to an iPad.
- With PoE support, power can be supplied via LAN cable.
- By changing the mounting surface, desktop and hanging installation are both supported.

[Basic system and operations]



Combination of a Control Assist Camera and 4K/HD Integrated Camera*5

The App for iPad "PTZ Cntrl" *4 can be downloaded from the App Store.

Download the free "PTZ Cntrl" *4 app for iPad and install it to enable wireless control of the camera from the iPad.

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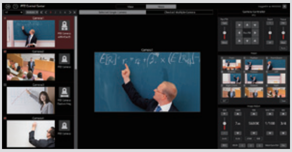
*1: Abbreviation of Power over Ethernet Plus. Conforms to IEEE802.3bt (Draft ver. 2.0). *2: Native output. *3: Over 59.94i. *4: An iPad (sold separately) and a wireless AP (sold separately) are required. Please install the iPad application "PTZ Cntrl" (free). For details, please visit Panasonic AW-HEA10W/K website (https://pro-av.panasonic.net/en/sales_o/camera/aw-hea10/).
*5: AW-UE70W/K, AW-UN70W/K, AW-HE130W/K, AW-HN130W/K, AW-HE40 series, AW-HN40HW/HK, AW-HE38HW/HK and AW-HN38HW/HK only.

Free Software NEW

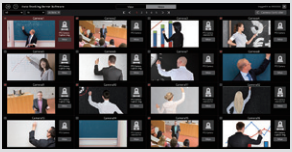
PTZ Control Center

Controls multiple PTZ cameras from PC

- Centralized management of multiple PTZ cameras
- Pan/Tilt/Zoom by button slider, or a touch on a screen
- Camera preset buttons with thumbnails (Register/Recall/Delete of up to 9 points)
- Camera picture quality adjustment
- Simultaneous control of multiple cameras (Focus/Iris/Gain/White balance/Shutter/ND Filter)
- Camera SD recording Start/Stop (Only for cameras that support SD card recording)
- Limits functions by administrator authentication
- Copies setting data between multiple PC
- Automatic camera discovery and network setting



Main screen



View screen

Supported Cameras:
AW-UE70W/K, AW-UN70W/K, AW-HE130W/K, AW-HN130W/K, AW-HE40 series, AW-HN40HW/HK, AW-HE38HW/HK, AW-HN38HW/HK, AW-HR140, Control Assist Camera (AW-HEA10W/K), POVCAM (AG-UMR20/AG-UCK20GJ/AG-MDR25/AG-MDC20GJ)

PTZ Virtual USB Driver

Software that converts PTZ camera on your network into Super Web cam

- Able to use PTZ cameras on the network as USB cameras
- Up to 5 cameras can be registered
- Automatic camera discovery and network setting

Supported Cameras:
AW-UE70W/K, AW-UN70W/K, AW-HE130W/K, AW-HN130W/K, AW-HE40 series, AW-HN40HW/HK, AW-HE38HW/HK, AW-HN38HW/HK, AW-HR140, AK-UB300GJ, POVCAM(AG-UMR20/AG-UCK20GJ/AG-MDR25/AG-MDC20GJ)

- PTZ Control Center and PTZ Virtual USB Driver can be downloaded from the Panasonic website (https://pro-av.panasonic.net/).

As of April, 2018

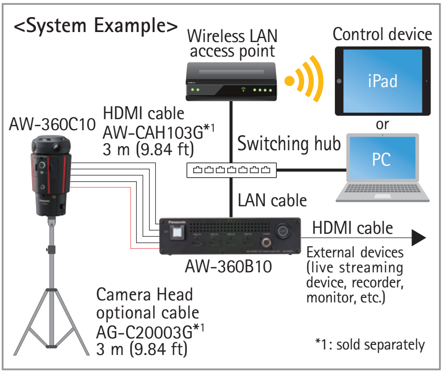
360-degree Live Camera

AW-360B10GJ
(360-degree Live Camera Base Unit)

AW-360C10GJ
(360-degree Live Camera Head)

360-degree uncompressed video 4K output (2:1 Equirectangular format)

- This system can stitch video from 4 cameras by itself without external equipment and output 360-degree video in 2:1 equirectangular format.
- Outputs natural images through "real-time active stitching capability" which detects an object at the seam, and adjusts stitching position constantly.
- By combinational AE / ATW of each cameras depending on shooting condition, it can adjust light and color totally.
- Outputs 4K/30p uncompressed high definition video with very low latency.
- Flexible operation thanks to easy installation and uninstallation at a shooting site.
- Capable of monitoring and configuration remotely with a PC via network. Control from iPad in Wi-Fi environment is also possible.
- We will offer high-reliability shooting for professional use such as prevention of unexpected cable removal.



■ Accessories (sold separately)

HDMI Cable	Camera Head Optional Cable
AW-CAH103G 3 m (9.84 ft) Contains 4 cables in AW-CAH103G	**AG-C20003G** 3 m (9.84 ft)

<Notes on Power Supply>
360-degrees Live Camera Base Unit AW-360B10GJ does not include AC adaptor. Please prepare a 4 pin XLR 12 V adaptor that can provide the rated power consumption (43.4 W) of the unit.

Clear, Sharp Video with Auto Tracking of Speaker

Auto Tracking Software Key

AW-SF100

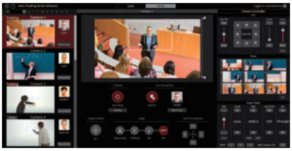
AW-SF200

2 Additional Licenses **AW-SF202**

3 Additional Licenses **AW-SF203**

*AW-UE70W/K, AW-UN70W/K, AW-HE130W/K, AW-HN130W/K, AW-HE40 series, AW-HN40HW/HK, AW-HE38HW/HK and AW-HN38HW/HK only.

- ●High-performance "motion detection" and high-accuracy "facial recognition[*1]" are used. Highly precise automatic tracking with few breaks is possible regardless of where the person is facing, such as when a lecturer is writing on a blackboard.
- ●An easy-to-understand GUI is employed to enable intuitive setting tasks.
- ●IP-based software is employed with operation via IP connection, so cameras can be set up in a classroom and operated remotely.
- ●The software can be set for use as a web application too, enabling control via tablet or smartphone as well as PC.
- ●Install on a PC[*2] and connect to a Panasonic remote camera.
- ●AW-SF100 allows a single PTZ camera to be controlled on either a stand-alone or web application version.
- ●AW-SF200 enables simultaneous auto tracking and centralized control of multiple cameras.[*3]


AW-SF200 Main View

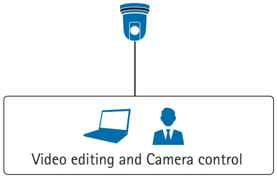
* Depending on the usage conditions, there may be errors in detection of tracked subjects or they may not be tracked properly. Please use this software in an environment in which corrections can be made by an operator. * There is a 30-day free trial available for Auto Tracking Software. Please purchase this "Auto Tracking Software Activation Key" after checking precautions and confirming that this will work in your environment during this free trial period. When purchasing optional software please refer to the Panasonic website <https://pro-av.panasonic.net/>"Software Download".

*1: The face recognition software of PUX Corporation is used for the face recognition function. *2: This refers to the Standalone version. If the Web application version is to be used, the Auto Tracking Software is installed on an HTTP server and used from there. *3: Up to four cameras per server can be controlled simultaneously.

Software key usage examples

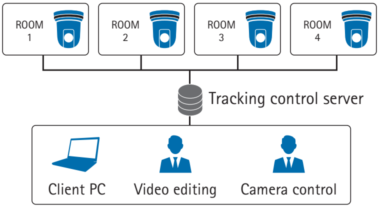
AW-SF100

With auto tracking, full-time manual tracking is not necessary. Auto tracking remote camera can record dynamic video with simple operations.



AW-SF200

Simultaneous auto tracking and centralized control of multiple cameras are possible. A server and simplified operations enable efficient lecture capture in multiple classrooms.



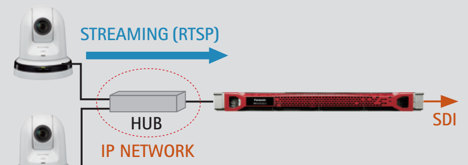
P2 Streaming Server

Remote camera video streaming via a network and SDI output; streaming receiver enables smooth operation on PC screen

- ●Equipped with original QoS to achieve stable streaming.
- ●GUI enables intuitive operation.
- ●Extensive input/output for flexible support.

* Remote Cameras do not support QoS.

[Connection Example]



- ●Number of registration cameras: up to 1,000 units
- ●Number of operable cameras for simultaneous streaming: up to 4 units

Compact Camera Head **AG-UCK20GJ**

Memory Card Portable Recorder **AG-UMR20**

"New POVCAM" with a Compact, Lightweight, Free-Shooting Design and IP Network Linking Capability

- ●A compact, lightweight, free-style shooting system inheriting the features of the 1st-generation POVCAM.
- ●Network operation for IP control and IP streaming.
- ●Acquisition of high-quality FHD (1920 x 1080) 59.94p/50p/23.98p images and high-resolution 4K (UHD (3840 x 2160)) 29.97p/23.98p/25p[*4] images is supported.
- ●Equipped with Double SD Memory Card Slots (SDXC supported) enabling Relay Recording with two SD memory cards. Extended recording is possible and can be used for backup recording.

*4:4K acquisition is possible only when connected to the AG-UCK20GJ Compact Camera Head. 4K refers to UHD (3840 x 2160) resolution. The maximum resolution in 4K shooting mode via HDMI/SDI output is FHD (1920 x 1080) 59.94i/50i.

4K / HD Integrated Camera Application Examples

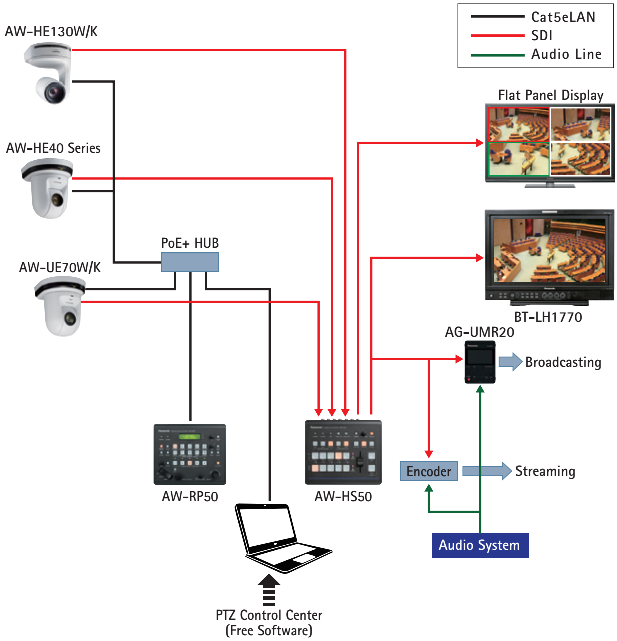
As of April, 2018

Application 01:

Parliament / Conference Room

Quick capture of speakers using extensive preset camera positions

Efficient camera control is possible by defining 4K/HD Integrated Camera positions in advance. Combining this with PTZ Control Center enables quick camera work with only few shooting staff.

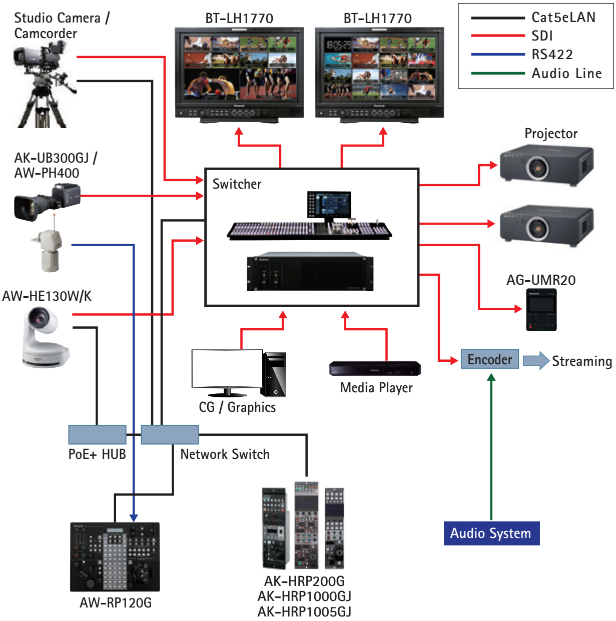


Application 02:

Event / HoW

Sophisticated image production combining high-performance cameras and switchers

By installing the optimum camera for each scene, it is possible to capture all the scenes. Richly varied shooting is possible through the control of multiple types of cameras using the Remote Camera Controller AW-RP120G and Remote Operation Panel (ROP) such as AK-HRP200G.

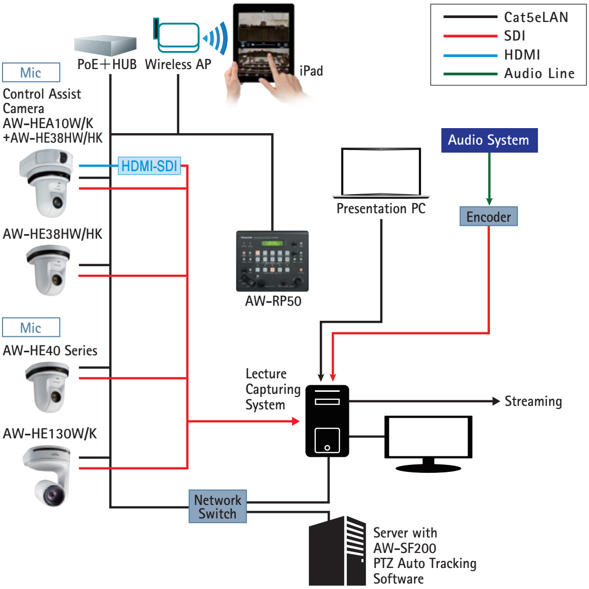


Application 03:

Lecture Capture

Flexible lecture recording and streaming with a Lecture Capturing System

Install a high-image-quality HD Integrated Camera such as the AW-HE130 to capture the delicate nuances of the instructor as well as the overall atmosphere of the lecture room. With a flexible link to an IP-based lecture capturing system, it is possible to perform everything from recording to distribution.

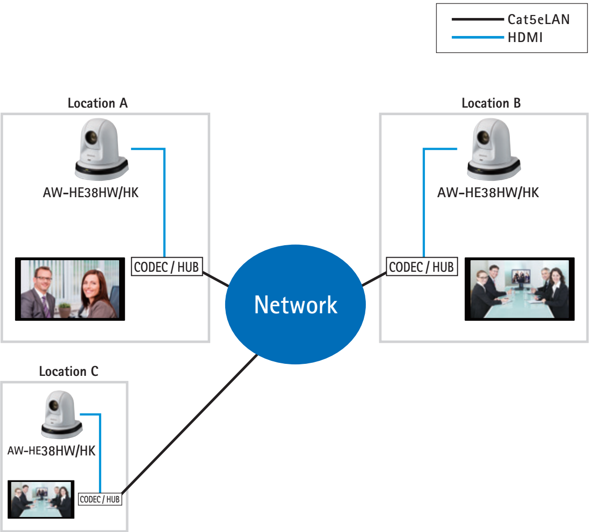


Application 04:

Telepresence

An extensive lineup of units that can be used as TV conferencing cameras

For TV conferencing cameras, customers can select from an extensive lineup that includes the compact and high-image-quality HD Integrated Camera such as the AW-HE38 which can capture all participants in the frame. Shoot video optimized for conference room size and meeting purpose.

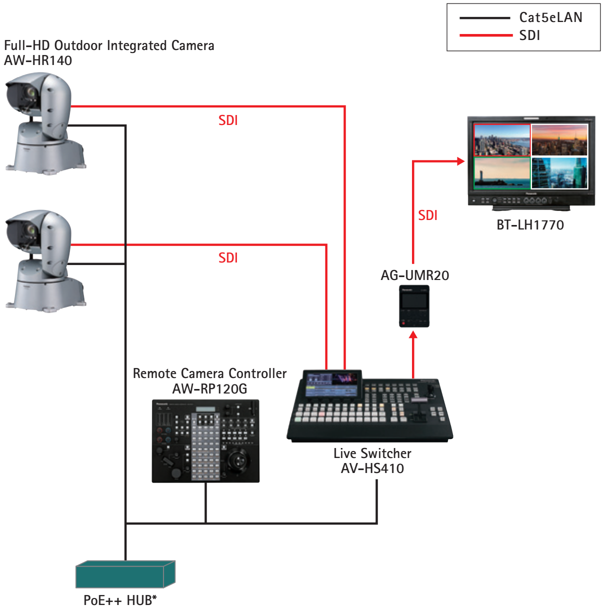


Application 05:

Information program
(weather camera)

Produce vivid weather information programs with outdoor installation in severe environments

The high-sensitivity, high-S/N ratio, and high-resolution AW-HR140 Full-HD Outdoor Integrated Camera can be installed on the roof and operated with a controller inside the station. It will shoot low-vibration clear video in severe weather conditions. With water and dust resistance and wipers as standard equipment, it will provide reliable information even during tsunami and typhoon situations when shooting is difficult.



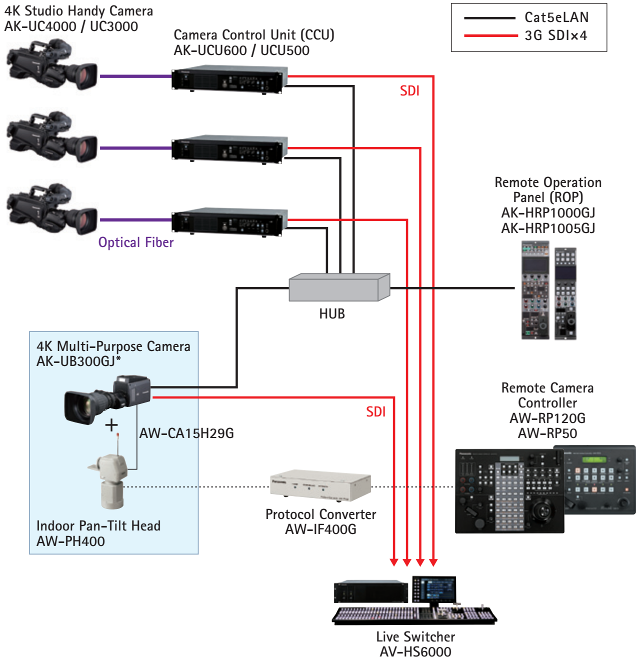
* Conforms to IEEE802.3bt (Draft ver. 2.0).

Application 06:

4K Studio

High-image-quality studio shooting with Studio Handy Cameras and Multi Purpose Cameras supporting 4K output

Utilize two types of 4K cameras for shooting situations such as music programs employing vivid lighting effects. By using 4K Studio Camera such as AK-UC4000 along with an AK-UB300GJ 4K Multi Purpose Camera with a pan-tilt mount, it is possible to build a 4K studio setup that will also handle remote camera control.



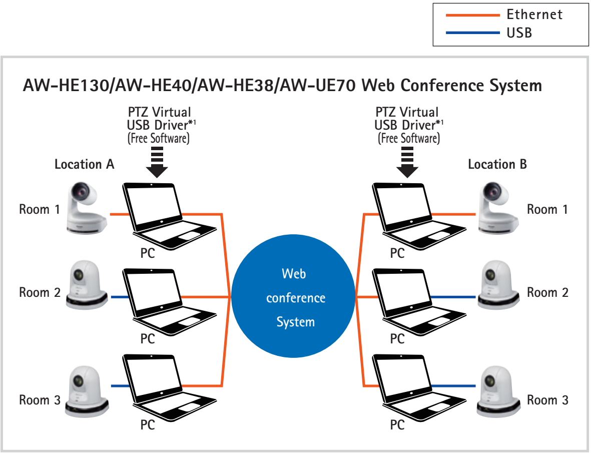
* For AK-UB300GJ, please prepare AC adaptors 12 V (DC) with more than 60 W.

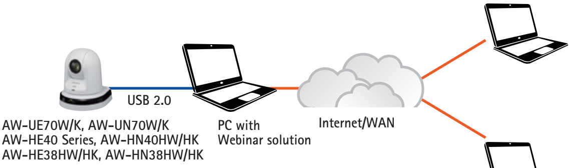
Application 07:

Web Conferencing & Webinars

USB functionality for web conferencing and web seminar with high quality video

The AW-HE40, AW-HE38, and AW-UE70 offer USB functionality using a standard USB Video Class driver to interface with most industry web conferencing and webinar software systems. This allows for a high quality 1080p video & audio via USB from a professional camera to interface with easy-to-use software web conferencing and webinar solutions.


Ethernet
USB
AW-HE130/AW-HE40/AW-HE38/AW-UE70 Web Conference System
PTZ Virtual USB Driver*1 (Free Software)
PTZ Virtual USB Driver*1 (Free Software)
Location A
Location B
Room 1
Room 2
Room 3
PC
PC
PC
Web conference System
PC
PC
PC
Room 1
Room 2
Room 3

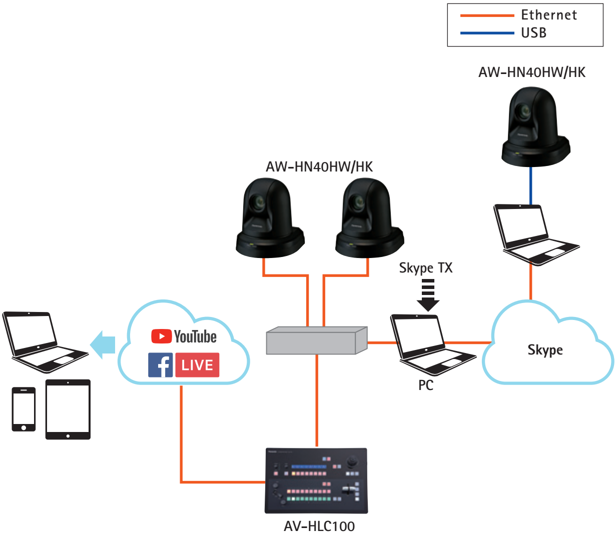


*1: AW-HE130 can be used as USB camera with PTZ Virtual USB Driver.

Application 08:

Live Streaming

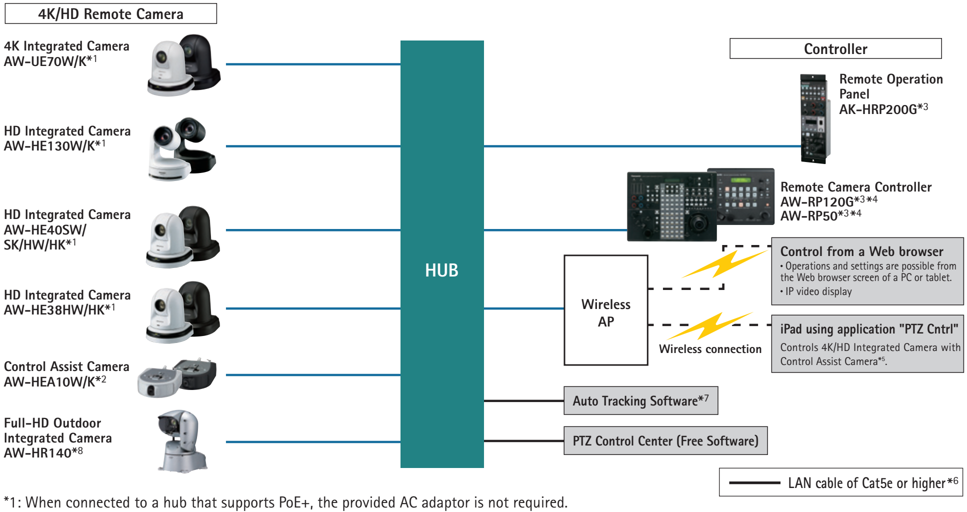
A camera compatible with NDI I HX can be connected to the AV-HLC100 Live Production Center to easily build a system suitable for live streaming. A single AV-HLC100 unit enables camera control, switching, and audio mixing. The AV-HLC100 also enables captured video to be directly uploaded to live streaming services such as YouTube Live and Facebook Live, and can be connected to Skype TX to insert live video from remote locations into a broadcast.



4K / HD Integrated Camera IP / Serial connection diagram

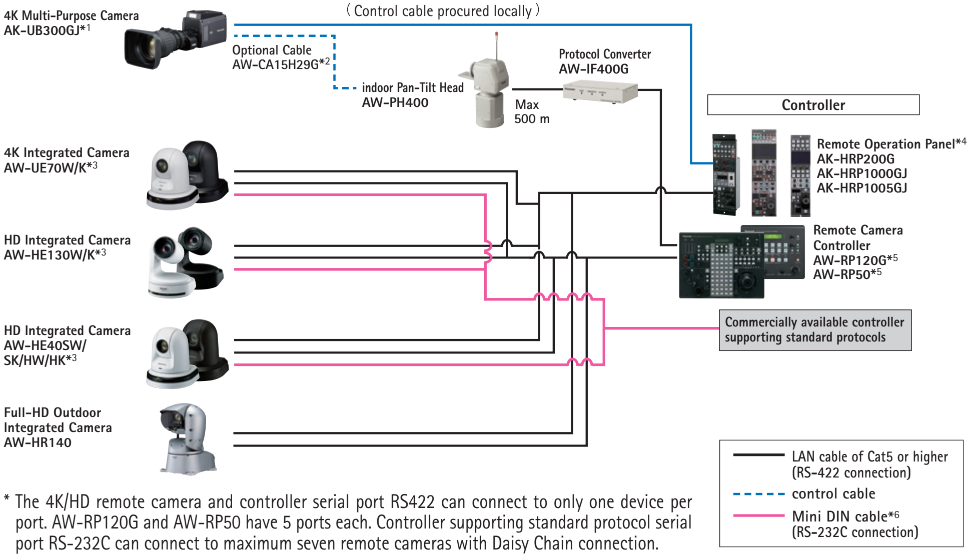
As of April, 2018

IP Connection Diagram



*1: When connected to a hub that supports PoE+, the provided AC adaptor is not required.
*2: When connected to a hub that supports PoE/PoE+, the provided AC adaptor is not required.
*3: AC adaptor AW-PS551 is required for AW-RP120G. Bundled AC adaptor is required for AW-RP50.
*4: The AW-HEA10W/K is not supported. Depending on the camera to be operated, this unit may require a software upgrade. For details, please contact the sales representative.
*5: An Apple iPad (sold separately) is required for use.
*6: When connecting AW-HE130W/K directly, please use a crossover cable. When connecting via a hub (switching hub), please use a straight cable.
*7: AW-UE70W/K, AW-UN70W/K, AW-HE130W/K, AW-HN130W/K, AW-HE40 series, AW-HN40HW/HK, AW-HE38HW/HK and AW-HN38HW/HK only.
*8: AW-HR140 PoE++ conforms to IEEE802.3bt (Draft ver. 2.0).

Serial Connection Diagram



* The 4K/HD remote camera and controller serial port RS422 can connect to only one device per port. AW-RP120G and AW-RP50 have 5 ports each. Controller supporting standard protocol serial port RS-232C can connect to maximum seven remote cameras with Daisy Chain connection.

*1: For AK-UB300GJ, please prepare AC adaptors 12 V(DC) with more than 60 W.
*2: AW-CA15H29G is not required when a remote operation panel (ROP) is directly connected to AK-UB300GJ.
*3: Unit cannot be simultaneously controlled with an RS-422 connection and an RS-232C connection.
*4: When using a Remote Operation Panel (ROP), an additional AC adaptor or PoE hub may be required depending on the type of ROP.
*5: AC adaptor AW-PS551 is required for AW-RP120G. Bundled AC adaptor is required for AW-RP50.
*6: There are limitations on the connection methods and the functions that can be controlled. For details, please contact the sales representative.

4K / HD Integrated Camera Specification Comparison

		4K Integrated Camera	
Appearance			
Model No.		**AW-UE70W/K, AW-UN70W/K**	**AW-HE130W/K, AW-HN130W/K**
General			
Lens / Pan Tilt System			
Control			
Power Requirements			
Power Consumption		1.3 A (AC adaptor supplied) 0.5 A (PoE+ power supply)	1.8 A (AC adaptor supplied) 0.6 A (PoE+ power supply)
Weight		Approx. 1.5 kg (3.30 lb)	Approx. 3.1 kg (6.83 lb) [Including mount bracket]
Dimension (W x H x D)*1		160 mm x 186 mm x 179 mm (6-5/16 inches x 7-41/128 inches x 7-3/64 inches)	180 mm x 228 mm x 234 mm (7-3/32 inches x 9 inches x 9-3/16 inches)
Camera			
Image Sensors		1/2.3-type MOS	1/2.86 type Full-HD 3MOS
Lens		Optical 20x zoom, Digital zoom 12x*7, i.Zoom 30x (22x when in 4K mode) F1.8 to F3.6 (f=4.08 mm (5/32 inches) to 81.6 mm (3-7/32 inches); 35 mm (1-3/8 inches) equivalent: 29.5 mm (1-5/32 inches) to 612.0 mm (24-3/32 inches))	Optical 20x zoom, Digital zoom 10x*7, F1.6 to F3.4 (f=4.5 mm to 90 mm; 35 mm equivalent: 32.13 mm to 642.5 mm)
Digital Extender Zoom		1.4x, 2.0x, 4.0x, 6.0x, 8.0x,	
Field of View	Horizontal	65.1° (wide) to 3.2° (tele)*2	60.2° (wide) to 3.3° (tele)
	Vertical	39.5° (wide) to 1.8° (tele)*2	36.2° (wide) to 1.9° (tele)
	Diagonal	72.4° (wide) to 3.7° (tele)*2	67.4° (wide) to 3.8° (tele)
Focus			
Focus Distance		Entire zoom range: 1500 mm Wide end: 100 mm	Entire zoom range: 800 mm Wide end: 400 mm
Horizontal Resolution		4K : 1300 TV lines Typ (Center area) HD: 1000 TV lines Typ (Center area)	
Minimum Illumination		59.94 Hz: 0.7 lx (50 IRE, F1.8, 48 dB, 1/60 without accumulation) 0.35 lx (50 IRE, F1.8, 48 dB,1/30 with accumulation[Frame Mix 6 dB]) 50 Hz: 0.7 lx (50 IRE, F1.8, 48 dB,1/50 without accumulation)0.35 lx (50 IRE, F1.8, 48 dB,1/25 with accumulation[Frame Mix 6 dB])	2 lx (50 IRE, F1.6, 36 dB)
Gain		Auto, 0 dB to 48 dB (3 dB step)	Auto, 0 dB to 36 dB
S/N		54 dB (standard)	60 dB (standard)
Frame mix		Auto, Off, 6 dB, 12 dB, 18 dB, 24 dB	0 dB to 24 dB
ND Filter		Auto*4, Through, 1/4, 1/16, 1/64	Through,1/8,1/64
P/T Mechanism			
Preset			
Pan/Tilt Operation Speed		Maximum speed during preset: 300°/s Maximum speed during manual: 90°/s	0.08°/s to 60°/s
Panning Range			
Tilting Range		–30° to 90°*5	-30° to 210°*5
Quietness		During preset: NC40 or less During manual: NC35 or less	NC35 or less
System			
LAN with built-in NDI|HX*6		AW-UN70W/K only	AW-HN130W/K only
Video Output	3G-SDI	✓	✓
	HD-SDI	✓	✓
	SD-SDI	–	✓
	HDMI	✓	✓
	Composite	–	✓
	USB	✓	–
Video Output Connector		BNC (3G/HD SDI) x 1 HDMI x 1 USB Mini-B port	BNC (HD/SD-SDI) x 1 BNC (VIDEO OUT) x 1 HDMI x 1
Remote Input/Output Connector	LAN	10BASE-T/100BASE-TX, RJ-45 Equipped with straight/crossover cable auto detection function	10BASE-T/100BASE-TX, RJ-45
	RS-422		
	RS-232C		
Audio Input/Output			
Synchronization System		Internal/External synchronization (BBS/Tri-level sync)	

*1: Excluding protrusions, cable cover, mount bracket *2: When OIS is OFF/Mode1. *3: Image Stabilizer OFF *4: "Auto" is available when "Scene" setting is "Full Auto". *5: Depending on the pan or tilt position, the camera may be reflected in the image. *6: This product is compatible with NDI|HX technology of NewTek, Inc. *7: Picture quality is lower with the digital zoom. *8: Conforms to IEEE802.3bt (Draft ver. 2.0).

As of April, 2018

HD Integrated Camera		Full-HD Outdoor Integrated Camera
AW-HE40SW/SK/HW/HK, AW-HN40HW/HK	**AW-HE38HW/HK, AW-HN38HW/HK**	**AW-HR140**
Lens / Pan Tilt System		
Serial / IP / IR		Serial / IP
DC 12 V (AC Adaptor supplied), DC42 V to 57 V (PoE+ power supply)		DC 12 V to 21.8 V, DC42 V to 57 V (PoE++ power supply)*8
1.2 A (AC adaptor supplied) 0.4 A (PoE+ power supply)		5.5 A (12 V power supply) 2.1 A (PoE++ power supply)*8
Approx. 1.5 kg (3.30 lb)		Approx. 9.0 kg (19.8 lb)
160 mm x 186 mm x 166 mm (6-5/16 inches x 7-41/128 inches x 6-17/32 inches)		258 mm x 357 mm x 397 mm (10-5/32 inches x 14-1/16 inches x 15-5/8 inches) (including protrusions and cable cover)
1/2.3 type MOS		1/2.86 type Full-HD 3MOS
Optical 30x zoom, Digital zoom 16x*7, i.Zoom 40x, F1.6 to F4.7 (f=4.3 mm (11/64 inches) to 129 mm (5-5/64 inches); 35 mm (1-3/8 inches) equivalent: 31.6 mm (1-31/128 inches) to 962.0 mm (37-7/8 inches))	Optical 22x Zoom, Digital zoom 16x*7, i.Zoom 30x F1.6 to F4.3 [f=4.3 mm (11/64 inches) to 94.6 mm(3-23/32 inches); 35 mm (1-3/8 inches) equivalent: 31.6 mm (1-31/128 inches) to 705.0 mm (27-49/64 inches)]	Optical 20x zoom, Digital zoom 10x*7, F1.6 to F3.4 (f=4.5 mm to 90 mm; 35 mm equivalent: 32.13 mm to 642.5 mm)
1.4x		
61.6° (wide) to 2.1° (tele)*3	61.6° (wide) to 2.9° (tele)*3	60.2° (wide) to 3.3° (tele)
37.0° (wide) to 1.1° (tele)*3	37.0° (wide) to 1.6° (tele)*3	36.2° (wide) to 1.9° (tele)
68.7° (wide) to 2.4° (tele)*3	68.7° (wide) to 3.3° (tele)*3	67.4° (wide) to 3.8° (tele)
Auto/Manual		
Entire zoom range: 1200 mm Wide end: 100 mm		Entire zoom range: 800 mm Wide end: 400 mm
1000 TV lines(Center area)		
59.94 Hz: 0.7 lx (50 IRE, F1.6, 48 dB,1/60 without accumulation), 0.35 lx (50 IRE, F1.6, 48 dB,1/30 with accumulation [Frame Mix 6 dB]) 50 Hz: 0.7 lx (50 IRE, F1.6, 48 dB,1/50 without accumulation), 0.35 lx (50 IRE, F1.6, 48 dB,1/25 with accumulation [Frame Mix 6 dB])		2 lx (50 IRE, F1.6, 36 dB, no frame accumulation)
Auto, 0 dB to 48 dB (3 dB step)		Auto, 0 dB to 42 dB (1 dB Step), 37 dB to 42 dB (Super Gain Mode)
54 dB (standard)		60 dB
Auto, Off, 6 dB, 12 dB, 18 dB, 24 dB		0 dB to 24 dB
–		Through, 1/8, 1/64
Up to 100		
Maximum speed during preset: 300°/s Maximum speed during manual: 90°/s		Maximum speed: 60 °/s or more
±175°		
-30° to 90°*5		–30° to 120°*5
During preset: NC40 or less During manual: NC35 or less		60 °/s: NC45 or less
AW-HN40HW/HK only	AW-HN38HW/HK only	–
–		✓
✓ (SW/SK model)	–	✓
–		–
✓ (HW/HK model)	✓	–
–		–
✓		–
BNC (HD-SDI) x 1 (SW/SK model) HDMI x 1 (HW/HK model) USB Mini-B port	HDMI x 1 USB Mini-B port	BNC (HD-SDI) x 2
10BASE-T/100BASE-TX, RJ-45 Equipped with straight/crossover cable auto detection function		10BASE-T/100BASE-TX, RJ-45
CONTROL IN RS422A (RJ-45)		
Mini DIN 8-pin (IN), Mini DIN 8-pin (OUT)		–
✓		MiniXLR (Line Input)
Internal		Internal/External synchronization (BBS/Tri-level sync)

4K / HD Integrated Camera Output Format/ Function Comparison

	4K Integrated Camera	HD Integrated camera			Full-HD Outdoor Integrated Camera
Model No.	AW-UE70W/K AW-UN70W/K	AW-HE130W/K AW-HN130W/K	AW-HE40 series AW-HN40HW/HK	AW-HE38HW/HK AW-HN38HW/HK	AW-HR140
Output Signal Format					
2160/29.97p, 25p	✓ HDMI output only	—	—	—	—
1080/59.94p	✓	✓	✓ HDMI model only	✓	✓
1080/29.97p	✓	✓[*1]	✓	✓	✓[*1]
1080/23.98p	—	✓[*2]	—	—	✓[*2]
1080/50p	✓	✓	✓ HDMI model only	✓	✓
1080/25p	✓	✓[*1]	✓	✓	✓[*1]
1080/59.94i	✓	✓	✓	✓	✓
1080/50i	✓	✓	✓	✓	✓
1080/29.97PsF	✓	✓[*3]	✓	✓	✓[*3]
1080/25PsF	✓	✓[*3]	✓	✓	✓[*3]
1080/23.98PsF	—	✓[*3]	—	—	✓[*3]
720/59.94p	✓	✓	✓	✓	✓
720/50p	✓	✓	✓	✓	✓
576/50p	—	✓[*4]	—	—	—
576/50i	—	✓[*4]	—	—	—
480/59.94p	—	✓[*4]	—	—	—
480/59.94i	—	✓[*4]	—	—	—
Function					
CineGanma	✓	✓	✓	✓	✓
DRS	✓	✓	✓	✓	✓
Hybrid DNR	—	✓	—	—	✓
HDR mode	✓ (Combine Images)	—	✓ (Combine Images)	✓ (Combine Images)	—
Optical Image Stabilization (OIS)	✓	✓	—	—	✓
Dynamic Image Stabilizing System (D.I.S.S.)	—	—	—	—	✓
Digital Image Stabilization	✓	—	✓	✓	—
Digital Extender Zoom	✓	✓	✓	✓	✓
i.Zoom	✓	—	✓	✓	—
Independent Color Correction Function	16-axis Color	12-axis Color 3-axis Skin Tone	16-axis Color	16-axis Color	12-axis Color 3-axis Skin Tone
Color Temperature Adjustment Mode	✓	✓	✓	✓	✓
Scene files	4 files	4 files	4 files	4 files	4 files
Freeze During Preset function	✓	✓	✓	✓	✓
Night mode	✓	✓	✓	✓	✓
IP control	✓	✓	✓	✓	✓
IP video monitoring	✓	✓	✓	✓	✓
HD video output via IP transmission H.264	4K/Full HD	Full HD	Full HD	Full HD	Full HD
Motion JPEG	4K[*5]/Full HD	Full HD	Full HD	Full HD	Full HD
PoE	PoE+	PoE+	PoE+	PoE+	PoE++[*6]
Wireless Remote Control	Up to 4	Up to 4	Up to 4	Up to 4	—
Turn-lock mechanism	✓	✓	✓	✓	—
Fan-less design	✓	✓	✓	✓	—
Color variations	black/white	black/white	black/white	black/white	silver
USB Video Class 1.0	✓	—	✓	✓	—
Audio Input	✓	✓	✓	✓	✓

*1: Native output *2: Over 59.94i *3: For 1080/25PsF, there are cases where 50i is displayed on the monitor. *4: A 'P' signal is output as HDMI output, an 'I' signal is output as SDI and an analog output for output formats of 480/59.94p(i) and 576/50p(i). *5: USB only. *6: Conforms to IEEE802.3bt (Draft ver. 2.0).

Remote Camera System Optional Products

As of April, 2018

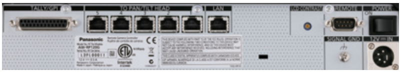
Remote Camera Controller

AW-RP120G

- AC adaptor (DC12 V) is required separately.

Power supply	DC12 V/0.5 A (DC Input range: DC10 V to DC16 V)
Power consumption	6.0 W
Weight	Approx. 3.0 kg (Approx. 6.61 lb)
Dimensions (W x H x D)	Approx. 342 mm x 77 mm x 265 mm (Approx. 13-15/32 inches x 3-1/32 inches x 10-7/16 inches) [excluding protrusions]

(Rear View)



* There is a possibility of requiring software update. For details, see "Support & Download" on the Panasonic website (https://pro-av.panasonic.net/en/).

Highly Functional Remote Controller with Joystick and Other Operating Enhancements.

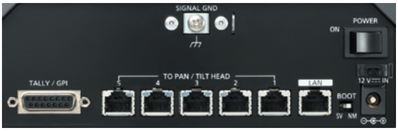
•**IP connection:** Up to 100 remote cameras can be connected and controlled via a switching hub. Automatic IP allocation simplifies the configuration of large-scale systems. In addition, it allows five AW-RP120G controllers to simultaneously control one remote camera.
•**Serial control compatibility:** Up to five remote cameras can be connected and controlled. Also compatible with existing systems, and an RS232C port enables external control.
•**Linkage with AW-HS50:** IP connection allows linking with an AW-HS50 Compact Live Switcher, for a highly efficient operating environment.
•**Newly designed control panel:** Features a pan/tilt joystick, seesaw zoom lever, focus dial, and iris dial. A special speed adjustment dial is provided for each of the pan/tilt, zoom and focus functions.
•**Tracing memory:** The remote camera operations (pan, tilt, zoom, focus, iris, and white balance modes) can be memorized and recalled. Up to ten memory items can be stored for each camera.
•**Preset memory:** Up to 100 camera angle settings (pan, tilt, zoom operation) can be registered and retrieved for each camera to greatly simplify a variety of camera controls.
•**Preset batch retrieval function:** By creating groups of any desired preset memories (up to four groups), multiple camera angle settings (up to ten cameras) can be retrieved in a single batch.
•**Camera Image Quality Adjustment:** Equipped with an AWB button for automatic white balance, and an ABB button for automatic black balance. Dedicated dials allow pedestal and gain adjustment for Rch and Bch. Colors can also be easily adjusted by manual control.
•**Direct Selection Buttons:** Ten camera selection buttons are provided. Also, numerical buttons from 1 to 50 and a page button enable quick recall of 100 preset memories and 10 tracing memories.
•**SD Memory Card:** Settings can be backed up on a SD memory card. This also allows settings to be copied to other controllers.

Remote Camera Controller

AW-RP50

Power supply	DC12 V ±10 % (AC adaptor provided)
Power consumption	0.5 A (With DC12 V)
Weight	Approx. 1.1 kg (Approx. 2.4 lb)
Dimensions (W x H x D)	210 mm x 67 mm x 177 mm (8-1/4 inches x 2-9/16 inches x 6-15/16 inches) [excluding protrusions]
Accessory	AC adaptor, Power cable

(Rear View)



* There is a possibility of requiring software update. For details, see "Support & Download" on the Panasonic website (https://pro-av.panasonic.net/en/).

Compact, easy-to-operate remote controller

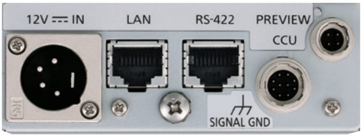
•**IP Control:** Up to 100 remote camera units can be controlled by AW-RP50 via IP and Ethernet hubs.
•**Multi-Control:** Up to 5 AW-RP50 can simultaneously controll one remote camera unit.
•**Serial Control:** Up to 5 cameras/pan-tilt heads can be controlled via serial connection.
•**AW-HS50 Link:** Linkage with AW-HS50 is available via IP connection, which enables smoother operation.
•**Preset Memory:** Up to 100 preset memories can be set and recalled.

Remote Operation Panel

AK-HRP200G

Power supply	DC12 V
Power consumption	4.2 W
Weight	Approx. 1.3 kg (Approx. 2.87 lb)
Dimensions (W x H x D)	92 mm x 308 mm x 55 mm (3-5/8 inches x 12-1/8 inches x 2-3/16 inches) [excluding protrusions]

(Rear View)



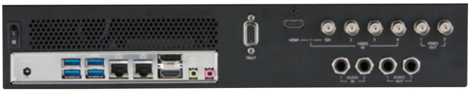
* There is a possibility of requiring software update. For details, see "Support & Download" on the Panasonic website (https://pro-av.panasonic.net/en/).

Compact operation panel also compatible with Studio Handy Cameras

•**Remote Operation:** The camera can be remotely operated via serial control or IP control. In addition to the AK-HC3800*1 Studio Handy Camera, it is also possible for Panasonic Multi-purpose Cameras, HD Convertible Cameras, and 4K/HD Integrated Cameras.
•**Compact 6U Size:** The unit is compact, with a width of 92 mm and a 6U height suitable for easy rack mounting.
•**ROP Menu/Camera Menu Setting:** The menu can be displayed on a monitor connected to the Camera Control Unit, so detailed camera settings can be made by operating the Remote Operation Panel.
•**Joystick Control Lever:** The joystick control lever enables fine manual iris/pedestal adjustment.
•**SD Memory Card Slot:** Scene files, user files*2 and lens file*2 can be saved on to a SD memory card. SD memory cards can also be used for firmware upgrades.
•**IP Connection*3:** A LAN terminal enables IP connection via Ethernet (RJ45 LAN cable).

*1: When power is supplied from the Camera Control Unit. *2: Only Studio Handy Camera can handle.
*3: External power supply (DC 12 V) required when LAN cable is used.

Live Production Center



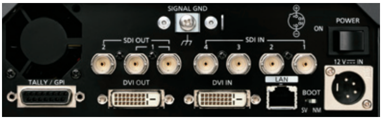
(Rear View)

AV-HLC100 NEW

An all-in-one switcher that connects with Panasonic PTZ cameras compatible with NDI I HX to provide camera control, video signal transmission, and audio mixing. The AV-HLC100 also enables direct video broadcasting to live streaming services such as YouTube Live and Facebook Live.

Power supply	DC 19 V (AC adaptor provided)
Power consumption	110 W
Weight	Approx. 6.05 kg (13.34 lbs)
Dimensions (W x H x D)	427 mm x 93 mm x 278 mm (16.8 inches x 3.67 inches x 10.96 inches) (excluding protrusions)

Compact Live Switcher



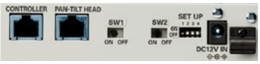
(Rear View)

AW-HS50

A compact Live Switcher with multi-view capability, this unit has 5 inputs and 3 outputs as standard along with frame synchronizers on all inputs.
*For details, please see page 61, 74.

Power supply	DC12 V ±10 % (AC adaptor provided)
Power consumption	2.0 A (With DC12 V input)
Weight	Approx. 1.4 kg (Approx. 3.08 lb)
Dimensions (W x H x D)	210 mm x 67 mm x 177 mm (8-1/4 inches x 2-5/8 inches x 6-15/16 inches) [excluding protrusions]
Accessory	AC adaptor, Power cable

Protocol Converter



(Rear View)

AW-IF400G

Enables various pan-tilt head and control panel combinations.
Using the AW-RP120G/RP50, the AW-PH400 indoor pan-tilt head can be operated. The maximum operation distance can be extended to 1,500 m.

Power supply	DC10.8 V to DC16 V
Power consumption	1.5 W
Weight	Approx. 0.4 kg (Approx. 0.88 lb)
Dimensions (W x H x D)	145 mm x 30 mm x 85 mm (5-11/16 inches x 1-3/16 inches x 3-3/8 inches) [excluding protrusions]

AC Adaptor

AW-PS551

This AC adaptor is designed to be used with Multi-Purpose Cameras, and their peripherals.
[For AW-RP120G, AK-HRP200G, AW-HS50]

Power input	AC100 V to 240 V/1.2 A, 50/60 Hz
Power output	DC12 V/3.0 A
Weight	Approx. 260 g (0.57 lb)
Dimensions (W x H x D)	57 mm x 37 mm x 115 mm (2-1/4 inches x 1-7/16 inches x 4-1/2 inches) [excluding protrusions]
Accessories	Power cable x 1, DC cable with ø5.5 plug: Approx. 3 m x 1 DC cable with ø6.5 plug: Approx. 3 m x 1

Operation-verified 3rd party devices: PoE+ compatible hub/injector list

【 GeoVision 】

PoE++

PoE Adapter
GV-PA901

*Operation-verified on Mar/2017

【 NETGEAR, Inc. 】

ProSAFE® 8-Port 10/100/1000 PoE Smart Switch with 2 Gigabit SFP Ports
GS510TP

*Operation-verified on Sep/2015

【 Allied Telesis 】

Gigabit PoE+ Injector
AT-6101GP

*Operation-verified on Sep/2015

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Panasonic does not guarantee the quality, performance, or the operation of the 3rd party devices.

Compatibility Overview for Remote Cameras/ Pan-tilt Heads*1 and Remote Camera Controller

		AW-RP120G	AW-RP50	AV-HLC100	AK-HRP200G	AK-HRP1000GJ/ AK-HRP1005GJ
4K Multi Purpose Camera	AK-UB300GJ	✓	✓	-	✓	✓
4K Integrated Camera	AW-UE70W/K AW-UN70W/K	✓	✓	✓	✓	✓
HD Integrated Camera	AW-HE130W/K AW-HN130W/K	✓	✓	✓	✓	✓
	AW-HE40SW/SK/HW/HK AW-HN40HW/HK	✓	✓	✓	✓	✓
	AW-HE38HW/HK AW-HN38HW/HK	✓	✓	✓	✓	✓
Full-HD Outdoor Integrated Camera	AW-HR140	✓	✓	✓	✓	✓
Pan-Tilt Head	AW-PH400	✓*2	✓*2	-	-	-
	AW-PH650	✓	✓	-	-	-

*1: Controllable items vary depending on the model. *2: requires AW-IF400G

AW-UE70W/K AW-UN70W/K

General	
Power Requirements	DC 12 V (Supplied AC adaptor) DC 42 V to 57 V (PoE+ power supply)
Current consumption	1.3 A (Supplied AC adaptor) 0.5 A (PoE+ power supply)
Ambient Operating Temperature	0 °C to 40 °C (32 °F to 104 °F)
Storage Temperature	–20 °C to 50 °C (–4 °F to 122 °F)
Allowable Humidity Ranges	20 % to 90 % (no condensation)
Mass	Approx. 1.5 kg (3.30 lb)
Dimensions (W x H x D)	160 mm x 186 mm x 179 mm (6-5/16 inches x 7-41/128 inches x 7-3/64 inches) [excluding protrusions, direct ceiling mount bracket]
Finish	[AW-UE70W/AW-UN70W] Pearl white [AW-UE70K/AW-UN70K] Metallic black
Controller Supported*1	AW-RP50, AW-RP120G, AK-HRP200G

Camera Unit		
Imaging Sensors		1/2.3-type MOS
Lens		Optical 20x zoom, F1.8 to F3.6 [f=4.08 mm (5/32 inches) to 81.6 mm (3-7/32 inches); 35 mm (1-3/8 inches)equivalent: 29.5 mm (1-5/32 inches) to 612.0 mm (24-3/32 inches)]
Focus		Switching between auto and manual
Focus distance		Entire zooming range:1.5 m (4.92 ft) Wide end: 10 cm (0.33 ft)
Color separation optical system		On-chip color filter system
Minimum Illumination	59.94 Hz	0.7 lx (50 IRE, F1.8, 48 dB,1/60 without accumulation) 0.35 lx (50 IRE, F1.8, 48 dB,1/30 with accumulation [Frame Mix 6 dB])
	50 Hz	0.7 lx (50 IRE, F1.8, 48 dB,1/50 without accumulation) 0.35 lx (50 IRE, F1.8, 48 dB,1/25 with accumulation [Frame Mix 6 dB])
Horizontal Resolution		4K : 1300 TV lines Typ (Center area) HD: 1000 TV lines Typ (Center area)
Gain Selection*2		Auto, 0 dB to 48 dB (3 dB step)
Frame Mix*3		Auto, Off, 6 dB, 12 dB, 18 dB, 24 dB
ND filter		Auto*4, Through, 1/4, 1/16, 1/64
Electronic Shutter Speed	During Full Auto	1/60 to 1/2000 (Auto Slow Shutter: Off)[59.94 Hz] 1/30 to 1/2000 (Auto Slow Shutter: On)[59.94 Hz] 1/50 to 1/2000 (Auto Slow Shutter: Off)[50 Hz] 1/25 to 1/2000 (Auto Slow Shutter: On)[50 Hz]
	During Auto	1/60 to 1/2000 [59.94 Hz] 1/50 to 1/2000 [50 Hz]
	During Manual	1/100, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000 [59.94 Hz] 1/120, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000 [50 Hz]
Synchro Scan	59.94 Hz	59.94 Hz to 660.09 Hz (255 step)
	50 Hz	50.00 Hz to 570.12 Hz (255 step)
Gamma		Off, Normal (Low, Mid, High), Cinema
White Balance		ATW, AWB A, AWB B, ATW, 3200K,5600K, VAR (2400K to 9900K)
Chroma Amount Variability		±3 step
Scene File		Full Auto, Manual1, Manual2, Manual3

Synchronization System	
Synchronization System	Internal synchronization/External synchronization (BBS, Tri-level sync)

Image Stabilization	
Image Stabilization	Optical (FHD, 4K)/4-axis hybrid image stabilizer (FHD) for stable

Input	
Power	DC 12 V IN, PoE+ (IEEE802.3at standard)
MIC/LINE Input	Stereo mini-jack (ø3.5 mm) Input impedance: Approx. 2 kΩ (unbalanced) [Mic input] •Supported microphones: Stereo mic (plug-in power, on/off switching via menu) •Supplied voltage: 2.5 V ± 0.5 V •Mic input level: –60 dBV ± 3 dBV (0 dB=1 V/Pa,1 kHz) [Line input] •Input level: -10 dBV ± 3 dBV
G/L IN	BBS (Black Burst Sync) signal and tri-level sync supported (BNC x 1)

Output		
Video Output	HDMI	HDMI connector • HDCP is not supported. • VIERA Link is not supported.
	3G/HD-SDI OUT	Compliant with the SMPTE424/SMPTE292M standards/75 Ω (BNC x 1)

Input/Output		
Input/ Output Connnector	LAN	LAN connector for IP control (RJ-45) Equipped with straight/crossover cable auto detection function
	RS-232C	Mini DIN 8-pin (IN) Mini DIN 8-pin (OUT)
	RS-422	CONTROL IN RS422A (RJ-45)
	USB	Mini-B port
	SD Card	microSD card slot

USB connection * This may vary depending on the operating environment.	
Video output	USB Video Class Ver1.0
Video compression format	Motion JPEG
Resolution	3840 x 2160, 1920 x 1080, 1280 x 720, 640 x 360
Frame rate	max 30 fps (59.94 Hz) max 25 fps (50 Hz)
Audio output	USB Audio Class Ver1.0
Audio compression format	Linear PCM, 48 kHz, 16-bit, 2 channels
Transfer modes(JPEG)	3840 x 2160 59.94 Hz: 5fps, 50 Hz: 5fps
	1920 x 1080/1280 x 720/640 x 360 59.94 Hz: 30fps/15fps/5fps, 50 Hz: 25fps/12.5fps/5fps
Supported models	Devices standardly equipped with a USB 2.0 compatible port

Pan-tilt Head Unit	
Installation Method	Stand-alone (Desktop) or suspended (Hanging)*5
Pan/tilt Operation Speed	Maximum speed during preset: 300°/s Maximum speed during manual: 90°/s
Panning Range	±175°
Tilting Range*5	–30° to 90°*6
Quietness	During preset: NC40 or less During manual: NC35 or less

Camera/pan-tilt head control	
IP connecting cable	• When connecting through a PoE+ hub: LAN cable*7 (category 5e or above), max. 100 m (328 ft) • When a PoE+ hub is not used: LAN cable*7 (category 5 or above) max.100 m (328 ft)
AW protocol connecting cable	LAN cable*7 (category 5 or above,straight cable), max. 1000 m (3280 ft)
Standard protocol connecting cable	Mini DIN 8-pin cable, male

SD card recording		
SD card recording		MPEG-4 AVC file standard compliant (.MP4)
Video compression format		MPEG-4 AVC/H.264 High Profile
Audio compression format		AAC-LC (48 kHz, 16 bit, 2 ch, 128 kbps)
Recording format /Bit rate	59.94 Hz	3840 x 2160/29.97p (Up to 72 Mbps), 1920 x 1080/59.94p (Up to 28 Mbps), 1920 x 1080/29.97p (Average 15 Mbps/ Average 10 Mbps/Average 6 Mbps), 1280 x 720/59.94p (Average 15 Mbps), 1280 x 720/29.97p (Average 8 Mbps/ Average 4 Mbps/Average 2 Mbps/Average 1 Mbps)
	50 Hz	3840 x 2160/25p(Up to 72 Mbps), 1920 x 1080/50p(Up to 28 Mbps), 1920 x 1080/25p(Average 15 Mbps/ Average 10 Mbps/Average 6 Mbps), 1280 x 720/50p(Average 15 Mbps), 1280 x 720/25p(Average 8 Mbps/ Average 4 Mbps/Average 2 Mbps/Average 1 Mbps)

Network		
Transfer modes	JPEG	1920 x 1080, 1280 x 720, 640 x 360, 320 x 180, 59.94 Hz (30fps/15fps/5fps)*8, 50 Hz (25fps/12.5fps/5fps)*8
	H.264	3840 x 2160, 1920 x 1080, 1280 x 720, 640 x 360, 320 x 180, 59.94 Hz (60fps*9/30fps/15fps/5fps)*8, 50 Hz (50fps*9/25fps/12.5fps/5fps)*8

Supported protocol	IPv4	TCP/IP, UDP/IP, HTTP, HTTPS, RTSP, RTP, RTP/RTCP, FTP, DHCP, DNS, NTP, IGMP, UPnP, ICMP, ARP, RTSPoverTCP, RTSPoverHTTP, SSL(TLS), MultiCast/UniCast
	IPv6	TCP/IP, UDP/IP, HTTP, HTTPS, RTSP, RTP, RTP/RTCP, FTP, DHCPv6, DNS,NTP, ICMPv6(MLD), RTSPoverTCP, RTSPoverHTTP, SSL(TLS), MultiCast/UniCast
i-OS, Android support		JPEG image display

Standard Accessories
Mount bracket for installation surface (Hanging*10 / Desktop): 1, Drop-prevention wire (already attached to the unit): 1, Bracket mounting screws (bind-head) M4 x 10 mm: 4, Main unit mounting screw (with flat washer, spring washer) M3 x 6 mm: 1, Power cable (1.5 m [4.92 ft]): 1, AC adaptor: 1, CD-ROM: 1

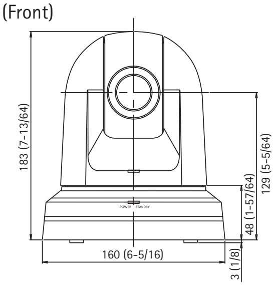
* 1: It may be necessary to upgrade the version of the controller so that the controller will support the unit. * 2: During Auto, 6 dB to 48 dB (6 dB step) are available for AGC Max Gain setting. * 3: During Auto, 0 dB, 6 dB, 12 dB and 18 dB are available for Auto F.Mix Max Gain setting. * 4: "Auto" is available when "Scene" setting is "Full Auto". * 5: To ensure safety, the unit must be secured using the mount bracket supplied. * 6: Depending on the pan or tilt position, the camera may be reflected in the image. * 7: Use of an STP (shielded twisted pair) cable is recommended. *8: The frame rate may be lower than the setting depending on the operating conditions. * 9: When the image resolution is "3840x2160", "640x360" or"320x180", 60fps or 50fps cannot be selected for the frame rate. *10: To ensure more safety, AW-UE70W/K can be secured by using the direct ceiling mount bracket (WV-Q105A).

*For information on "Output Signal Format", see page 36.

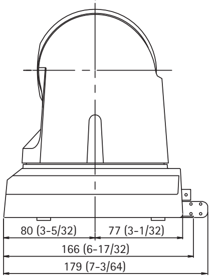
Dimensions

Unit: mm(inches)

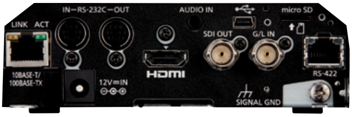
(Front)



(Side)

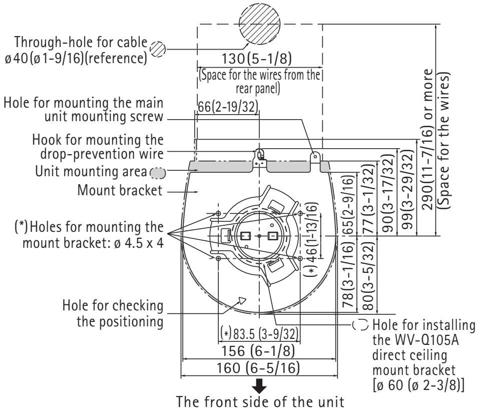


Rear View



Bottom View

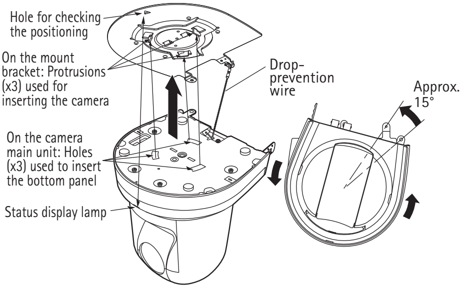
Unit: mm(inches)


Through-hole for cable ø40(ø1-9/16)(reference)
130(5-1/8)
(Space for the wires from the rear panel)
Hole for mounting the main unit mounting screw
66(2-19/32)
Hook for mounting the drop-prevention wire
Unit mounting area
Mount bracket
(*)Holes for mounting the mount bracket: ø 4.5 x 4
Hole for checking the positioning
(*)46(1-13/16)
65(2-9/16)
77(3-1/32)
90(3-17/32)
99(3-29/32)
290(11-7/16) or more (Space for the wires)
78(3-1/16)
80(3-5/32)
(*)83.5 (3-9/32)
156 (6-1/8)
160 (6-5/16)
Hole for installing the WV-Q105A direct ceiling mount bracket [ø 60 (ø 2-3/8)]
The front side of the unit

Ceiling Installation View

Optimal for both hanging and desktop installation.

The mounting bracket and drop-preventation wire are standard accessories. Ceiling and desktop installation are both possible. Mount the bracket onto the installation surface and then put and turn the main unit on the bracket to be installed.


Hole for checking the positioning
On the mount bracket: Protrusions (x3) used for inserting the camera
On the camera main unit: Holes (x3) used to insert the bottom panel
Status display lamp
Drop-prevention wire
Approx. 15°

- The mounting bracket for discontinued AW-HE50 and AW-HE60 and current AW-HE40 series, AW-HN40HW/HK, AW-HE38HW/HK and AW-HN38HW/HK can also be used.

* Wiring, mounting, and removal must be done by a qualified technician.
To ensure safety, consult with the dealer from whom you purchased the system.

*For "Terminal Pin Configuration", see page 43.

AW-HE130W/K AW-HN130W/K

General	
Power Requirements	DC 12 V (AC adaptor supplied) DC 42 - 57 V (PoE+ power supply) 1.8 A (AC adaptor supplied) 0.6 A (PoE+ power supply)
Ambient Operating Temperature	0 °C to 40 °C (32 °F to 104 °F)
Allowable Humidity Ranges	20 % to 90 % (no condensation)
Storage Temperature	–20 °C to 50 °C (–4 °F to 122 °F)
Mass	Approx. 3.1 kg (6.83 lb) [Including mount bracket]
Dimensions (W x H x D)	180 mm x 228 mm x 234 mm (7-3/32 inches x 9 inches x 9-3/16 inches) (excluding protrusions, cable cover, direct ceiling mount bracket)
Finish	[AW-HE130WP/AW-HE130WE/AW-HN130W] Pearl white [AW-HE130KP/AW-HE130KE/AW-HN130K] Metallic black
Controller Supported*1	AW-RP120G, AW-RP50, AK-HRP200G

Camera Unit		
Imaging Sensors		1/2.86-type Full-HD 3MOS
Lens		Optical 20 zoom, F1.6 to F3.4 (f=4.5 mm to 90 mm; 35 mm equivalent: 32.13 mm to 642.5 mm)
Focus		Switching between auto and manual
Focus Distance		Entire zooming range: 800 mm (2.62 ft) Wide end: 400 mm (1.31 ft)
Color Separation Optical System		3MOS
Minimum Illumination		2 lx (50 IRE, F1.6, 36 dB)
Horizontal Resolution		1000 TV lines Typ (Center area)
Gain Selection		Auto, 0 dB to 36 dB
Frame Mix*2		0 dB, 6 dB, 12 dB, 18 dB, 24 dB
Electronic Shutter Speed	59.94p/ 59.94i	1/100, 1/120, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000
	29.97p	1/30, 1/60, 1/120, 1/250, 1/500,1/1000, 1/2000, 1/4000, 1/10000
	23.98p	1/24, 1/60, 1/120, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000
	50p/50i	1/60, 1/120, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000
	25p	1/25, 1/60, 1/120, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000
Synchro Scan	59.94 Hz	60.15 Hz to 642.21 Hz
	50 Hz	50.15 Hz to 535.71 Hz
Gamma		HD, SD, FILMLIKE1, FILMLIKE2, FILMLIKE3 0.30 to 0.75 (Manual setting)
White Balance		AWB A, AWB B, ATW, 3200K, 5600K, VAR (2000K to 15000K)
Chroma Amount Variability		OFF, -99 % to 40 %
Scene File		Scene1, Scene2, Scene3, Scene4

Synchronization System	
Synchronization System	Internal/External synchronization (BBS/Tri-level sync)

Input	
Input Connector	DC 12 V IN, G/L IN (BNC) • BBS (Black Burst Sync), tri-level sync supported • Locking to a color subcarrier is not possible with BBS. PoE+ (IEEE802.3at standard)

Output		
Video output	HDMI	HDMI connector • HDCP is not supported. • Viera Link is not supported.
	3G/HD/ SD-SDI OUT	SMPTE424/SMPTE292/ SMPTE259 standards 75 Ω (BNC x 1)
	VIDEO OUT	NTSC/PAL 1.0 V [p-p]/75 Ω (BNC x 1)

Input/Output		
Input/ Output connector	LAN	LAN connector for IP control (RJ-45), PoE+
	RS-422	CONTROL IN RS-422A (RJ-45)
	MIC/LINE input	ø3.5 mm stereo mini jack Input impedance: High impedance • During MIC input Supported mic: Stereo mic (plug-in power, on/off switching via menu) • Supply voltage: 2.5 V ± 0.5 V Mic input sensitivity: Approx. -40 dBV ± 3 dBV (0 dB=1 V/Pa, 1 kHz) • During LINE input Input level: Approx. -10 dBV ±3 dBV

Pan-tilt Head Unit	
Installation Method	Stand-alone (Desktop) or suspended (Hanging)*3
Camera/Pan-tilt Head Control	IP connecting cable • When connecting through a PoE+ hub: LAN cable*4 (category 5e or above, straight cable), max. 100 m (328 ft) • When a PoE+ hub is not used: LAN cable*4 (category 5 or above, crossover cable) max.100 m (328 ft)
	RP connecting Cable LAN cable*4 (category 5 or above, straight cable), max. 1000 m (3280 ft) RS-422A, AW series protocol
Pan-tilt Operation Speed	0.08°/s to 60°/s
Panning Range	±175°
Tilting Range*7	-30° to 210°*5
Quietness	NC35 or less

Standard Accessories

Mount bracket for installation surface (Hanging*6 / Desktop): 1, Drop-prevention wire: 1, Drop-prevention wire mounting screw (comes attached to the unit): 1, Bracket mounting screws (bind-head) M4 x 10 mm: 4, Main unit mounting screw (with flat washer,spring washer) M3 x 6 mm: 1, Cable cover: 1, Power cable: 1, AC adaptor: 1, CD-ROM

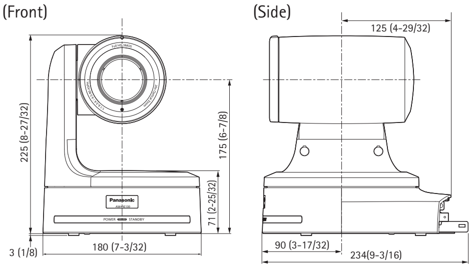
*1: It may be necessary to upgrade the version of the controller in order to support the unit. For details on upgrading, visit the support page on the following website (https://pro-av.panasonic.net/). *2: This cannot be configured when the format is 1080/29.97p, 1080/23.98p, 1080/29.97PsF 1080/23.98PsF, 1080/25p, or 1080/25PsF. *3: To ensure safety, the unit must be secured using the mount bracket supplied. *4: Use of an STP (shielded twisted pair) cable is recommended. *5: Depending on the pan or tilt position, the camera may be reflected in the image. *6: To ensure more safety, AW-HE130W/K can be secured by using the direct ceiling mount bracket (WV-Q105A).

*For information on "Output Signal Format", see page 36.

As of April, 2018

Dimensions

Unit: mm(inches)



Pin Configuration

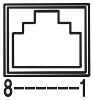
(Common for AW-UE70W/K, AW-UN70W/K, AW-HE130W/K, AW-HN130W/K, AW-HE40 series, AW-HN40HW/HK, AW-HE38HW/HK, AW-HN38HW/HK)

RS-422 Connector <RS-422>

This RS-422 connector (RJ45) is connected when exercising serial control over the unit from an external device. Use a cable with the following specifications for the connection to this connector. The tally lamp can be lit by shorting the TALLY signal (pin 2) with GND (pin 1).

- Do not apply a voltage to the TALLY signal pin.

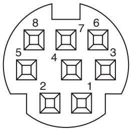
LAN cable*[1](category 5 or above, straight cable), max. 1000 m (3280 ft)
* Use of an STP (shielded twisted pair) cable is recommended.



Pin NO.	Signal	Pin NO.	Signal
1	GND	5	TXD+
2	TALLY	6	RXD+
3	RXD–	7	–
4	TXD–	8	–

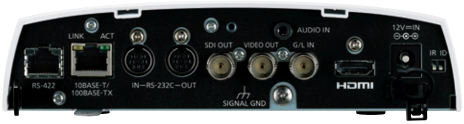
RS-232C Connectors <RS-232C IN/OUT>

Connects to an RS-232C cable.



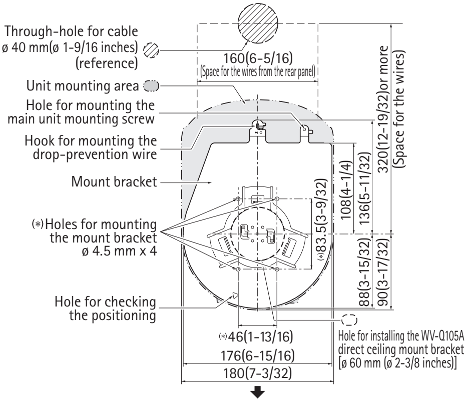
RS-232C IN		RS-232C OUT	
Pin NO.	Signal	Pin NO.	Signal
1	DTR_IN	1	DTR_OUT
2	DSR_IN	2	DSR_OUT
3	TXD_IN	3	TXD_OUT
4	GND	4	GND
5	RXD_IN	5	RXD_OUT
6	GND	6	GND
7	IR OUT R	7	NC
8	IR OUT L	8	NC

Rear View



Bottom View

Unit: mm(inches)

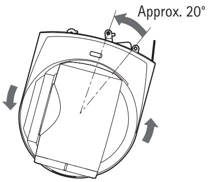


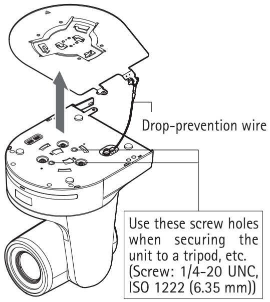
The front panel of the unit on this side.

Ceiling Installation View

Optimal for both hanging and desktop installation.

The mounting bracket and drop-preventation wire are standard accessories. Ceiling and desktop installation are both possible. Mount the bracket onto the installation surface and then put and turn the main unit on the bracket to be installed.





Use these screw holes when securing the unit to a tripod, etc. (Screw: 1/4-20 UNC, ISO 1222 (6.35 mm))

- AW-HE120W/K installation mount bracket can be used. The mounting bracket for HE130 differs from that of discontinued AW-HE50 and AW-HE60 and current AW-UE70W/K, AW-UN70W/K, AW-HE40 Series, AW-HN40HW/HK, AW-HE38HW/HK and AW-HN38HW/HK.

* Wiring, mounting, and removal must be done by a qualified technician. To ensure safety, consult with the dealer from whom you purchased the system.

AW-HE40SW/SK/HW/HK AW-HN40HW/HK

General	
Power Requirements	DC 12 V (Supplied AC adaptor) DC 42 - 57 V (PoE+ power supply)
Current Consumption	1.2 A (Supplied AC adaptor) 0.4 A (PoE+ power supply)
Ambient Operating Temperature	0 °C to 40 °C (32 °F to 104 °F)
Allowable Humidity Ranges	20 % to 90 % (no condensation)
Storage Temperature	–20 °C to 50 °C (–4 °F to 122 °F)
Mass	Approx. 1.5 kg (3.30 lb)
Dimensions (W x H x D)	160 mm x 186 mm x 166 mm (6-5/16 inches x 7-41/128 inches x 6-17/32 inches) (excluding protrusions, direct ceiling mount bracket)
Finish	AW-HE40HW / AW-HE40SW / AW-HN40HW: Pearl white AW-HE40HK / AW-HE40SK / AW-HN40HK: Metallic black
Controller Supported*1	AW-RP50, AW-RP120G, AK-HRP200G

Camera Unit		
Imaging Sensors		1/2.3-type MOS
Lens		Optical 30x zoom, F1.6 to F4.7[f=4.3 mm (11/64 inches) to 129 mm (5-5/64 inches); 35 mm (1-3/8 inches) equivalent: 31.6 mm (1-31/128 inches) to 962.0 mm (37-7/8 inches)]
Focus		Switching between auto and manual
Focus Distance		Entire zooming range: 1.2 m (3.94 ft) Wide end: 10 cm (0.33 ft)
Color Separation Optical System		On-chip color filter system
Minimum Illumination	59.94 Hz	0.7 lx (50 IRE, F1.6, 48 dB,1/60 without accumulation) 0.35 lx (50 IRE, F1.6, 48 dB,1/30 with accumulation [Frame Mix 6 dB])
	50 Hz	0.7 lx (50 IRE, F1.6, 48 dB,1/50 without accumulation) 0.35 lx (50 IRE, F1.6, 48 dB,1/25 with accumulation [Frame Mix 6 dB])
Horizontal Resolution		1000 TV lines Typ (Center area)
Gain Selection*2		Auto, 0 dB to 48 dB (3 dB step)
Frame Mix*3		Auto, Off, 6 dB, 12 dB, 18 dB, 24 dB
Electronic Shutter Speed	Full Auto	1/30 to 1/2000[59.94 Hz] 1/25 to 1/2000[50 Hz]
	Auto	1/60 to 1/2000[59.94 Hz] 1/50 to 1/2000[50 Hz]
	Manual	1/100, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000[59.94 Hz] 1/120, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000[50 Hz]
Synchro Scan	59.94 Hz	59.94 Hz to 660.09 Hz (255 steps) 50.00 Hz to 570.12 Hz (255 steps)
Gamma	50 Hz	Off, Normal (Low, Mid, High), Cinema
White Balance		ATW, AWB A, AWB B, 3200K, 5600K, VAR (2400K to 9900K)
Chroma Amount Variability		±3 step
Scene File		Full Auto, Manual1, Manual2, Manual3
Color Bars		FULL BAR

Synchronization System	
Synchronization System	Internal synchronization

Input	
Power	DC 12 V IN, PoE+ (IEEE802.3at standard)
MIC/LINE Input	Stereo mini-jack (ø3.5 mm) Input impedance: Approx. 2 kΩ (unbalanced) [Mic input] •Supported microphones: Stereo mic (plug-in power,on/off switching via menu) •Supplied voltage: 2.5 V ± 0.5 V •Mic input level: –60 dBV ± 3 dBV [Line input] •Input level: –10 dBV ±3 dBV

Output		
Video Output	AW-HE40H AW-HN40HW AW-HN40HK HDMI	HDMI connector • HDCP is not supported. • Viera Link is not supported.
	AW-HE40S HD-SDI	Compliant with the SMPTE292M standards/75 (BNC x 1)

Input/Output		
Input/ Output Connnector	LAN	LAN connector for IP control (RJ-45), PoE+ Equipped with straight/crossover cable auto detection function
	RS-232C	Mini DIN 8-pin (IN) Mini DIN 8-pin (OUT)
	RS-422	CONTROL IN RS422A (RJ-45)
	USB	Mini-B port (Used for maintenance)
	SD Card	microSD card slot (Used for maintenance)

USB connection * This may vary depending on the operating environment.	
Video output	USB Video Class Ver1.0
Video compression format	Motion JPEG
Resolution	1920 x 1080, 1280 x 720, 640 x 360
Frame rate	max 30 fps (System frequency 59.94 Hz) max 25 fps (System frequency 50 Hz)
Audio output	USB Audio Class Ver1.0
Audio compression format	Linear PCM, 48 kHz, 16-bit, 2 channels
Supported models	Devices standardly equipped with a USB 2.0 compatible port

Pan-tilt Head Unit	
Installation Method	Stand-alone (Desktop) or suspended (Hanging)*4
Pan-tilt Operation Speed	Maximum speed during preset: 300°/s Maximum speed during manual: 90°/s
Panning Range	±175°
Tilting Range*5	–30° to 90°*5
Quietness	During preset: NC40 or less During manual: NC35 or less
Camera/Pan-tilt Head Control	• When connecting through a PoE+ hub: LAN cable*6 (category 5e or above), max. 100 m (328 ft) • When a PoE+ hub is not used: LAN cable*6 (category 5 or above) max.100 m (328 ft)
	AW protocol connecting cable • LAN cable*6 (category 5 or above,straight cable), max. 1000 m (3280 ft)
	Standard protocol connecting cable • Mini DIN 8-pin cable, male

SD card recording	
SD card type	micro SDHC (4 GB to 32 GB), micro SDXC (64 GB to 128 GB), Speed class 10 or higher
System frequency	59.94 Hz/50 Hz
Video compression format	MPEG-4 AVC/H.264 High Profile
Audio compression format	AAC-LC (48 kHz, 16 bit, 2 ch, 128 kbps)
Audio output	USB Audio Class Ver1.0
SD card recording	MPEG-4 AVC file standard compliant (.MP4)
Recording format	1920 x 1080/59.94p, 1920 x 1080/50p, 1920 x 1080/29.97p,1920 x 1080/25p, 1280 x 720/59.94p, 1280 x 720/50p, 1280 x 720/29.97p, 1280 x 720/25p

Network		
Resolution	JPEG	VGA (640 x 360), QVGA (320 x 180) max.30 fps 1920 x 1080, 1280 x 720, 640 x 360, 320 x 180 max.30 fps
	H.264	1920 x 1080, 1280 x 720, 640 x 360, 320 x 180 max.60 fps

Supported protocol	IPv4	TCP/IP, UDP/IP, HTTP, HTTPS, RTSP, RTP, RTP/RTCP, FTP, DHCP, DNS, NTP, IGMP, UPnP, ICMP, ARP, RTSPoverTCP, RTSPoverHTTP, SSL(TLS), MultiCast/UniCast
	IPv6	TCP/IP, UDP/IP, HTTP, HTTPS, RTSP, RTP, RTP/RTCP, FTP, DHCPv6, DNS,NTP, ICMPv6(MLD), RTSPoverTCP, RTSPoverHTTP, SSL(TLS), MultiCast/UniCast
i-OS, Android support		JPEG image display

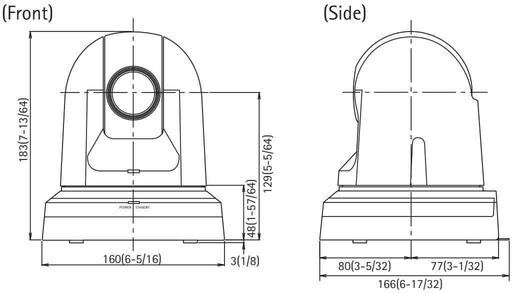
Standard Accessories
Mount bracket for installation surface (Hanging*7/ Desktop): 1, Drop-prevention wire mounting screw (already attached to the unit): 1, Bracket mounting screws (bind-head) M4 x 10 mm: 4, Main unit mounting screw (with flat washer, spring washer) M3 x 6 mm: 1, Power cable (1.8 m [5.9 ft]): 1, AC adaptor: 1, CD-ROM

*1: It may be necessary to upgrade the version of the controller in order to support the unit. *2: During Auto, 6 dB to 48 dB (6 dB step) are available for AGC Max Gain setting. *3: During Auto, 0 dB, 6 dB, 12 dB and 18 dB are available for Auto F.Mix Max Gain setting. *4: To ensure safety, the unit must be secured using the mount bracketsupplied. *5: Depending on the pan or tilt position, the camera may be reflected in the image. *6: Use of an STP (shielded twisted pair) cable is recommended. *7: To ensure more safety, AW-HE40SW/SK/HW/HK can be secured by using the direct ceiling mount bracket (WV-Q105A).

*For information on "Output Signal Format", see page 36.

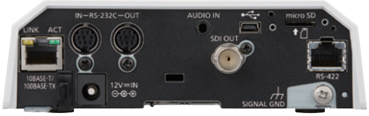
Dimensions

Unit: mm(inches)

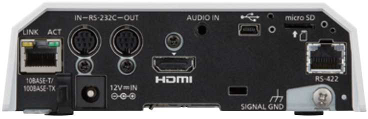

(Front)
(Side)

Rear View

AW-HE40SW

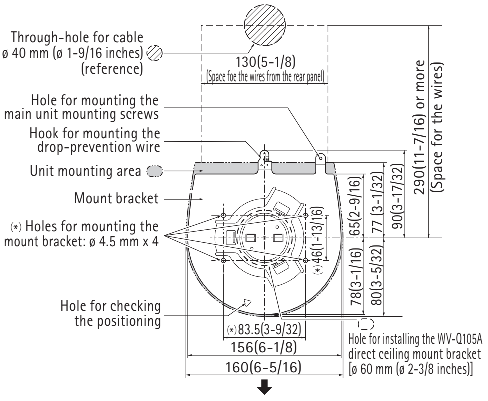


AW-HE40HW / AW-HN40HW



Bottom View

Unit: mm(inches)

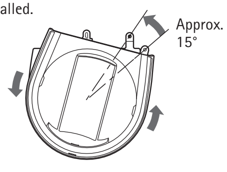

Through-hole for cable ø 40 mm (ø 1-9/16 inches) (reference)
130(5-1/8)
(Space foe the wires from the rear panel)
Hole for mounting the main unit mounting screws
Hook for mounting the drop-prevention wire
Unit mounting area
Mount bracket
(*) Holes for mounting the mount bracket: ø 4.5 mm x 4
Hole for checking the positioning
(*)83.5(3-9/32)
156(6-1/8)
160(6-5/16)
(*)46(1-13/16)
65(2-9/16)
77 (3-1/32)
90(3-17/32)
78(3-1/16)
80(3-5/32)
290(11-7/16) or more
(Space for the wires)
Hole for installing the WV-Q105A direct ceiling mount bracket [ø 60 mm (ø 2-3/8 inches)]

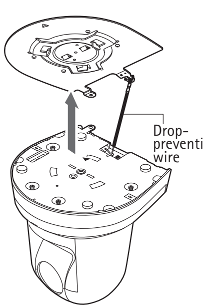
The front panel of the unit on this side.

Ceiling Installation View

Optimal for both hanging and desktop installation.

The mounting bracket and drop-preventation wire are standard accessories. Ceiling and desktop installation are both possible. Mount the bracket onto the installation surface and then put and turn the main unit on the bracket to be installed.





- The mounting bracket for discontinued AW-HE50 and AW-HE60 and current AW-UE70W/K, AW-UN70W/K, AW-HE38HW/HK and AW-HN38HW/HK can also be used.

* Wiring, mounting, and removal must be done by a qualified technician.
To ensure safety, consult with the dealer from whom you purchased the system.

*For "Terminal Pin Configuration", see page 43.

AW-HE38HW/HK AW-HN38HW/HK

General	
Power requirements	DC 12 V (Supplied AC adaptor) DC 42 V to 57 V (PoE+ power supply)
Current consumption	1.2 A (Supplied AC adaptor) 0.4 A (PoE+ power supply)
Ambient operating temperature	0 °C to 40 °C (32 °F to 104 °F)
Allowable humidity ranges	20 % to 90 % (no condensation)
Storage temperature	–20 °C to 50 °C (–4 °F to 122 °F)
Mass	Approx. 1.5 kg (3.30 lb)
Dimensions (W x H x D)	160 mm x 186 mm x 166 mm (6-5/16 inches x 7-41/128 inches x 6-17/32 inches) [excluding protrusions, direct ceiling mount bracket]
Finish	[AW-HE38HW/AW-HN38HW] Pearl white, [AW-HE38HK/AW-HN38HK] Metallic black
Controller supported*1	AW-RP50, AW-RP120G, AK-HRP200G

Camera unit		
Imaging sensors		1/2.3-type MOS
Lens		AW-HE38HW/HK : Motorized 22x zoom, F1.6 to F4.3 [f=4.3 mm (11/64 inches) to 94.6 mm(3-23/32 inches); 35 mm (1-3/8 inches) equivalent: 31.6 mm (1-31/128 inches) to 705.0 mm (27-49/64 inches)]
Focus		Switching between auto and manual
Focus distance		Entire zooming range:1.2 m (3.94 ft) Wide end: 10 cm (0.33 ft)
Color separation optical system		On-chip color filter system
Minimum illumination	59.94 Hz	0.7 lx (50 IRE, F1.6, 48 dB,1/60 without accumulation) 0.35 lx (50 IRE, F1.6, 48 dB,1/30 with accumulation [Frame Mix 6 dB])
	50 Hz	0.7 lx (50 IRE, F1.6, 48 dB,1/50 without accumulation) 0.35 lx (50 IRE, F1.6, 48 dB,1/25 with accumulation [Frame Mix 6 dB])
Horizontal resolution		1000 TV lines Typ (Center area)
Gain selection*2		Auto, 0 dB to 48 dB (3 dB step)
Frame mix*3		Auto, Off, 6 dB, 12 dB, 18 dB, 24 dB
Electronic shutter speed	During Full Auto	1/30 to 1/2000 [59.94 Hz] 1/25 to 1/2000 [50 Hz]
	During Auto	1/60 to 1/2000 [59.94 Hz] 1/50 to 1/2000 [50 Hz]
	During Manual	1/100, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000 [59.94 Hz] 1/120, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000 [50 Hz]
Synchro scan		59.94 Hz : 59.94 Hz to 660.09 Hz 50 Hz : 50.00 Hz to 570.12 Hz
Gamma		Off, Normal (Low, Mid, High), Cinema
White balance		AWB A, AWB B, ATW, 3200K,5600K, VAR (2400K to 9900K)
Chroma amount variability		±3 step
Scene file		Full Auto, Manual1, Manual2, Manual3
Output format	HD	1080:59.94p/50p 1080:59.94i/50i 1080:29.97p/25p 1080:29.97PsF/25PsF 720:59.94p/50p
Synchronization system		Internal synchronization

INPUT	
Power	DC 12 V IN, PoE+ (IEEE802.3at standard)
Mic/line input	Stereo mini-jack (ø3.5 mm) Input impedance: Approx. 2 kΩ (unbalanced) [Mic input] Supported microphones: Stereo mic (plug-in power, on/off switching via menu) Supplied voltage: 2.5 V ± 0.5 V Mic input level: –60 dBV ± 3 dBV [Line input] Input level: -10 dBV ± 3 dBV

OUTPUT		
Output Video	HDMI	HDMI connector * HDCP is not supported. * VIERA Link is not supported.

INPUT/OUTPUT		
Input/ Output connector	LAN	LAN connector for IP control (RJ-45) Equipped with straight/crossover cable auto detection function
	RS-232C	Mini DIN 8-pin (IN) Mini DIN 8-pin (OUT)
	RS-422	CONTROL IN RS422A (RJ-45)
	USB	Mini-B port
	SD card	microSD card slot

USB connection * This may vary depending on the operating environment.	
Video output	USB Video Class Ver1.0
Video compression format	Motion JPEG
Resolution	1920 x 1080, 1280 x 720, 640 x 360
Frame rate	max 30 fps (System frequency 59.94 Hz) max 25 fps (System frequency 50 Hz)
Audio output	USB Audio Class Ver1.0
Audio compression format	Linear PCM, 48 kHz, 16-bit, 2 channels
Supported models	Devices standardly equipped with a USB 2.0 compatible port

Pan-tilt head unit	
Installation method	Stand-alone (Desktop) or suspended (Hanging)*4
Pan/tilt operation speed	Maximum speed during preset: 300°/s Maximum speed during manual: 90°/s
Panning range	±175°
Tilting range	–30°to 90°*5
Quietness	During preset: NC40 or less During manual: NC35 or less

Camera/pan-tilt head control	
IP connecting cable	When connecting through a hub: LAN cable*6 (category 5 or above),max. 100 m (328 ft) When using a PoE+ hub: LAN cable*6 (category 5e or above),max. 100 m (328 ft) When a hub is not used: LAN cable*6 (category 5 or above),max. 100 m (328 ft)
AW protocol connecting cable	LAN cable*6 (category 5 or above,straight cable), max. 1000 m (3280 ft)
Standard protocol connecting cable	Mini DIN 8-pin cable, male

SD card recording	
SD card type	micro SDHC (4 GB to 32 GB), micro SDXC (64 GB to 128 GB), Speed class 10 or higher
System frequency	59.94 Hz/50 Hz

As of April, 2018

Video compression format	MPEG-4 AVC/H.264 High Profile
Audio compression format	AAC-LC (48 kHz, 16 bit, 2 ch, 128 kbps)
SD card recording	MPEG-4 AVC file standard compliant (.MP4)
Recording format	1920 x 1080/59.94p, 1920 x 1080/50p, 1920 x 1080/29.97p, 1920 x 1080/25p, 1280 x 720/59.94p, 1280 x 720/50p, 1280 x 720/29.97p, 1280 x 720/25p

Network		
Resolution	JPEG	VGA (640 x 360), QVGA (320 x 180) max.30 fps 1920 x 1080, 1280 x 720, 640 x 360, 320 x 180 max.30 fps
	H.264	1920 x 1080, 1280 x 720, 640 x 360, 320 x 180 max.60 fps
Supported protocol	IPv4	TCP/IP, UDP/IP, HTTP, HTTPS, RTSP, RTP, RTP/RTCP, FTP, DHCP, DNS, NTP, IGMP, UPnP, ICMP, ARP, RTSPoverTCP, RTSPoverHTTP, SSL(TLS), MultiCast/UniCast
	IPv6	TCP/IP, UDP/IP, HTTP, HTTPS, RTSP, RTP, RTP/RTCP, FTP, DHCPv6, DNS, NTP, ICMPv6(MLD), RTSPoverTCP, RTSPoverHTTP, SSL(TLS), MultiCast/UniCast
i-OS, Android support		JPEG image display

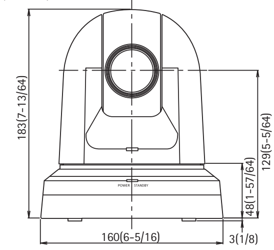
Standard Accessories
Mount bracket for installation surface (Hanging*7 / Desktop): 1 Drop-prevention wire (already attached to the unit): 1 Bracket mounting screws (bind-head) M4 x 10 mm: 4 Main unit mounting screw (with flat washer, spring washer) M3 x 6 mm: 1 Power cable (1.5 m [4.92 ft]):[AW-HE38HW/HKPJ]:1, [AW-HE38HW/HKEJ]:3, [AW-HE38HW/HKPC]:1 AC adaptor: 1

*1: It may be necessary to upgrade the version of the controller so that the controller will support the unit. *2: During Auto, 6 dB to 48 dB (6 dB step) are available for AGC Max Gain setting. *3: During Auto, 0 dB, 6 dB, 12 dB and 18 dB are available for Auto F.Mix Max Gain setting. *4: To ensure safety, the unit must be secured using the mount bracket supplied. *5: Depending on the pan or tilt position, the camera may be reflected in the image. *6: Use of an STP (shielded twisted pair) cable is recommended. *7: To ensure more safety, AW-HE38HW/HK can be secured by using the direct ceiling mount bracket (WV-Q105A).

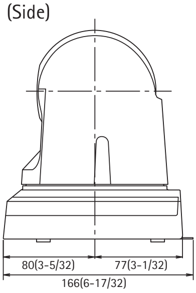
Dimensions

Unit: mm(inches)

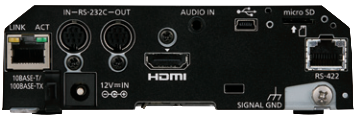
(Front)



(Side)

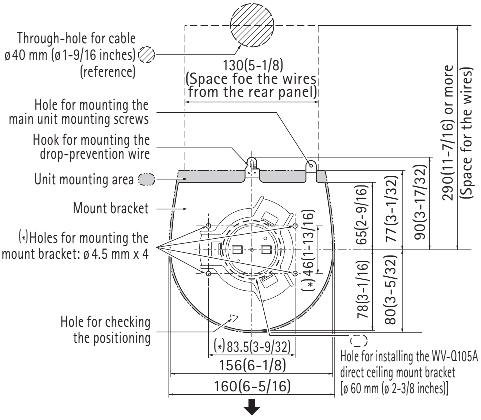


Rear View



Bottom View

Unit: mm(inches)

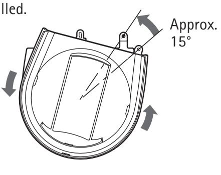


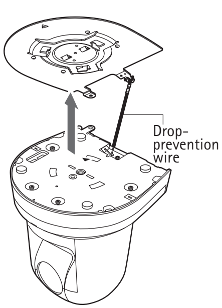
The front panel of the unit on this side.

Ceiling Installation View

Optimal for both hanging and desktop installation.

The mounting bracket and drop-preventation wire are standard accessories. Ceiling and desktop installation are both possible. Mount the bracket onto the installation surface and then put and turn the main unit on the bracket to be installed.





- The mounting bracket for discontinued AW-HE50 and AW-HE60 and current AW-UE70W/K, AW-UN70W/K, AW-HE40 series and AW-HN40HW/HK can also be used.

* Wiring, mounting, and removal must be done by a qualified technician.
To ensure safety, consult with the dealer from whom you purchased the system.

*For "Terminal Pin Configuration", see page 43.

Remote Camera System – Specifications & Dimensions

AW-HR140

*Specifications are subject to change without notice.

General	
Power Requirements	DC 12 V to 21.8 V (DC IN connector) DC 42 V to 57 V (PoE++ power supply)
Current Consumption	3.1 A to 5.5 A (DC IN connector) 1.2 A (PoE++ power supply)
Ambient Operating Temperature	–15 °C to 45 °C (5 °F to 113 °F) (preheating is required when –5 °C (23 °F) or less)
Ambient Operating Humidity	10% to 100% (no condensation)
Storage Temperature	–20 °C to 55 °C (–4 °F to 131 °F)
Storage Humidity	10% to 95% (no condensation)
Mass	Approx. 9.0 kg (19.84 lb)
Dimensions (W x H x D)	258 mm x 357 mm x 397 mm (10-5/32 inches x 14-1/16 inches x 15-5/8 inches) (including protrusions and cable cover)
Finish	Silver, salt resistant coating
Waterproof and Dust Proof	IP65 compliant
Maximum Permissible Wind Speed	15 m/sec: Operates normally 50 m/sec: Operation possible 60 m/sec: No damage
Wiper	Installed as standard
Heater	Installed as standard
Defroster	Installed as standard
Controller supported	AW-RP120G, AW-RP50, AK-HRP200G • It may be necessary to upgrade the version of the controller in order to support the unit. For details on upgrading, visit the support page on the following website. (https://pro-av.panasonic.net/)

Camera Unit		
Imaging Sensors		1/2.86-type Full-HD 3MOS
Lens		Optical 20x zoom/10x digital zoom, F1.6 to F3.4 (f=4.5 mm to 90 mm; 35 mm equivalent: 32.13 mm to 642.5 mm)
Focus		Switching between auto and manual
Focus Distance		Entire zooming range: 800 mm (2.62 ft) Wide end: 400 mm (1.31 ft)
Color Separation Optical System		3MOS
Minimum Illumination		2 lx (50 IRE, F1.6, 36 dB, without accumulation)
Horizontal Resolution		1000 TV lines Typ (Center area)
Gain Selection		Auto, 0 dB to 42 dB (1 dB steps) 37 dB to 42 dB is Super Gain Mode
Frame Mix		0 dB, 6 dB, 12 dB, 18 dB, 24 dB • This cannot be configured when the format is 1080/29.97p, 1080/23.98p, 1080/29.97PsF, 1080/23.98PsF, 1080/25p, or 1080/25PsF. • When [Iris Mode] or [Focus Mode] is set to [Auto], this cannot be set to 18 dB or 24 dB.
Electronic Shutter Speed	59.94p / 59.94i	1/100, 1/120, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000
	29.97p	1/30, 1/60, 1/120, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000
	23.98p	1/24, 1/60, 1/120, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000
	50p / 50i	1/60, 1/120, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000
	25p	1/25, 1/60, 1/120, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000
Synchro Scan	59.94 Hz	60.15 Hz to 642.21 Hz (255 steps)
	50 Hz	50.15 Hz to 535.71 Hz (255 steps)
Gamma		HD, FILMLIKE1, FILMLIKE2, FILMLIKE3 0.30 to 0.75 (Manual setting)
White Balance		AWB A, AWB B, ATW, 3200K, 5600K, VAR (2000K to 15000K)
Chroma Amount Variability		OFF, –99% to 40%
Scene File		Scene1, Scene2, Scene3, Scene4
Intelligent Functions		Auto function for each of accumulation, gain, iris, electronic shutter, ND, and ATW

Synchronization System		
Synchronization System		Internal/External synchronization (BBS/Tri-level sync)
Line Input <AUDIO IN(1/2)>	Input impedance	High impedance
	Input	• 2 channels, XLR balanced input • Input signal level: +4 dBu/0 dBu/–20 dBu (selectable in menu) • Volume variable range: –40 dB to +12 dB (can be changed in 1 dB steps in the menu)
	Output	• 4 channels, superimposed over SDI output • Embedded audio output level: FS-12 dB: –12 dBFS, FS-18 dB: –18 dBFS, FS-20 dB: –20 dBFS (selectable in menu) • Sampling frequency: 48 kHz (synchronized to video) • Quantization bit rate: 24-bit (LPCM) • Audio compression format (IP): G.726, AAC-LC (High quality)

Input		
Input Connector	12V IN	XLR connector
	G/L IN	BNC connector • BBS (Black Burst Sync), tri-level sync supported • Locking to a subcarrier is not possible with BBS.
	Audio input	mini XLR connector (line input) #1: INPUT1 Common, #2: INPUT1 HOT, #3: INPUT1 COLD, #4: INPUT2 Common, #5: INPUT2 HOT, #6: INPUT2 COLD

Output		
Video Output	3G/HD-SDI OUT	SMPTE424/SMPTE292 standards 75 Ω (BNC x 2) • OSD output is possible from the SDI OUT 1/PM connector but not from the SDI OUT 2 connector.

Input/Output		
Input/ Output Connector	LAN	LAN connector for IP control/video output/Audio output/ PoE++ power supply PoE++ (IEEE802.3bt Draft ver.2.0 standard)
	RS-422	CONTROL IN RS-422A
	EXT	#1: DC GND, #2: HOT, #3: COLD, #4: 12V-OUT

Pan-tilt Head Unit		
Installation Method		Stand-alone (Desktop) or suspended (Hanging) • To ensure safety, the unit must be secured using the mount bracket supplied.
Camera/ Pan-tilt Head Control	IP connecting cable	• When connecting through a PoE++ hub: LAN cable*1 (category 5e or above, straight cable), max. 100 m (328 ft) • When a PoE++ hub is not used: LAN cable*1 (category 5 or above, straight cable) max. 100 m (328 ft)
	AW series connecting cable/ standard protocol connecting cable	LAN cable*1 (category 5 or above, straight cable), max. 1000 m (3280 ft)
Pan/Tilt Operation Speed		Maximum speed 60°/s or higher
Panning Range		±175° • For suspended installations, the positions of the pins that determine the movement range must be changed.
Tilting Range		–30° to 210° • Depending on the pan or tilt position, the camera may be reflected in the image. • For suspended installations, the positions of the pins that determine the movement range must be changed.
Quietness		60°/s (NC45 or less)
Vibration Correction		D.I.S.S. (Dynamic Image Stabilizing System)

Standard Accessories
Hexagonal bolt M8 x 30 mm: 4, M8 washer: 4, Spring washer: 4, Cable cover: 1, Washer nozzle mount bracket: 1, Drop-prevention wire: 1, Drop-prevention wire mounting screw (with hexagonal socket, for unit) M4 x 10 mm: 1

*1: Use of an STP (shielded twisted pair) cable is recommended.

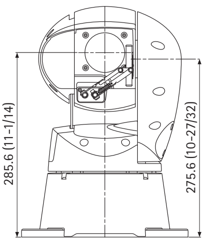
- When connecting directly to a controller without an Ethernet hub, use a cross cable.

*For information on "Output Signal Format", see page 36.

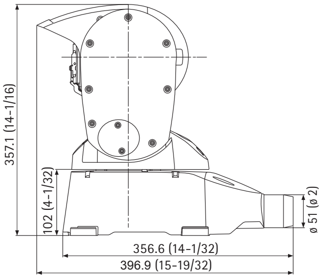
Dimensions

Unit: mm(inches)

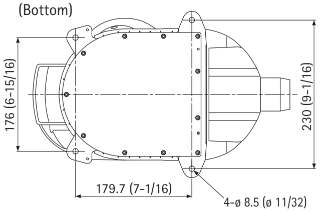
(Front)



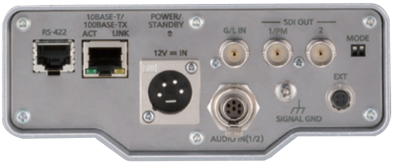
(Side)



(Bottom)



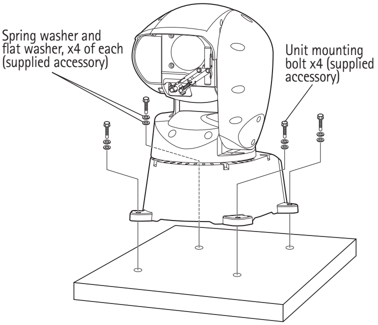
Rear View



Mounting the camera to the installation surface

When fixing directly to the installation surface

Pass the cables through the bottom wiring hole or side wiring hole before putting the camera down on the installation surface.



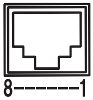
Pin Configuration

RS-422 Connector <RS-422>

This RS-422 connector (RJ45) is connected when exercising serial control over the unit from an external device. Use a cable with the following specifications for the connection to this connector. The tally lamp can be lit by shorting the TALLY signal (pin 2) with GND (pin 1).

- Do not apply a voltage to the TALLY signal pin.

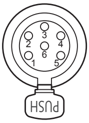
LAN cable*[1](category 5 or above, straight cable), max. 1000 m (3280 ft)
* Use of an STP (shielded twisted pair) cable is recommended.



Pin NO.	Signal	Pin NO.	Signal
1	GND	5	TXD+
2	TALLY	6	RXD+
3	RXD–	7	–
4	TXD–	8	–

AUDIO IN Connector [AUDIO IN]

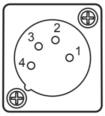
External audio (LINE) input connector



Amphenol LTW
TECHNOLOGY CO., LTD.

Pin NO.	Signal
1	INPUT1 Common
2	INPUT1 Hot
3	INPUT1 Cold
4	INPUT2 Common
5	INPUT2 Hot
6	INPUT2 Cold

12 V IN Connector

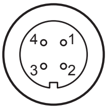


HA16RA-4P (77)
(Hirose Electric Co.)

Pin NO.	Signal
1	GND
2	–
3	–
4	+12V

EXT Connector [EXIT]

Output connector for washer control and DC 12 V



HR10A-7R-4SC (73)
(Hirose Electric Co.)

Pin NO.	Signal
1	GND
2	Hot
3	Cold
4	DC 12V OUT

AW-HEA10W/K

General	
Power Requirements	5.0 V DC (when using AC adaptor) 44 - 57 V DC (PoE power supply) 0.86 A (when using AC adaptor) 0.14 A (PoE power supply)
Allowable Operating Temperature	0°C to 40°C (32°F to 104°F)
Allowable Relative Humidity	10% to 80% (no condensation)
Unit Weight	Approx. 0.9 kg (1.98 lb) (excluding mounting brackets)
Dimensions (W x H x D)	183 mm x 65 mm x 225 mm (7-3/16 inches x 2-9/16 inches x 8-7/8 inches)

Camera Unit	
Image Sensor	1/2.33 type MOS solid-state image sensor (Effective size of image sensor: 1/4.37 type) Total pixels: Approx. 15.3 million Effective pixelsVideo: Approx. 3.91 million (16:9)
Lens	F2.0 (f = 2.15 mm) 35 mm equivalent; Approx. 18.0 mm (16:9) Field of view: 95° (horizontal), 56° (vertical) [When zoom is 1x]
Shutter Speed	1/60 to 1/12000
White Balance	ATW, Sunny, Cloudy, Indoor1, Indoor2, AWB A, AWB B
Standard Illumination	1,400 lx
Minimum Illumination	Approx. 20 lx (1/60 in auto mode)

Input/Output Connector	
HDMI	HDMI connector • HDCP is not supported. • Viera Link is not supported.
Network	10BASE-T/100BASE-TX, RJ-45 connector, Automatic recognition of straight/crossover cable
USB	Mini-B (for maintenance)
SD Memory Card	microSD card slot (for maintenance)

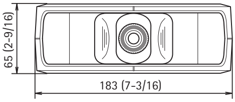
PTZ Cntrl Compatible Devices and Operating Systems
Supported devices: iPad Supported operating systems: iOS 8.1

Standard Accessories
Mounting bracket A (for mounting this unit): 1,Mounting bracket B (for securing this unit, for AW-HE130): 2, Mounting bracket C (for AW-HE40): 1, Drop-prevention wire: 1, Drop-prevention wire mounting screw M4 x 8 mm: 1, Bracket mounting screws A M4 x 10 mm: 8, Bracket mounting screws B M3 x 6 mm: 4, AC adaptor: 1, Power cable: 1

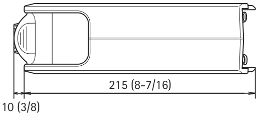
Dimensions

Unit: mm(inches)

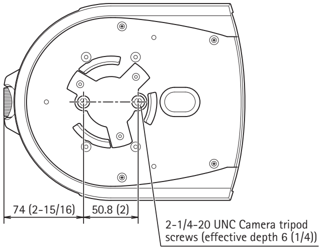
(Front)



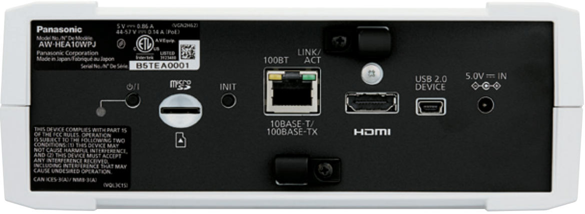
(Side)



(Bottom)

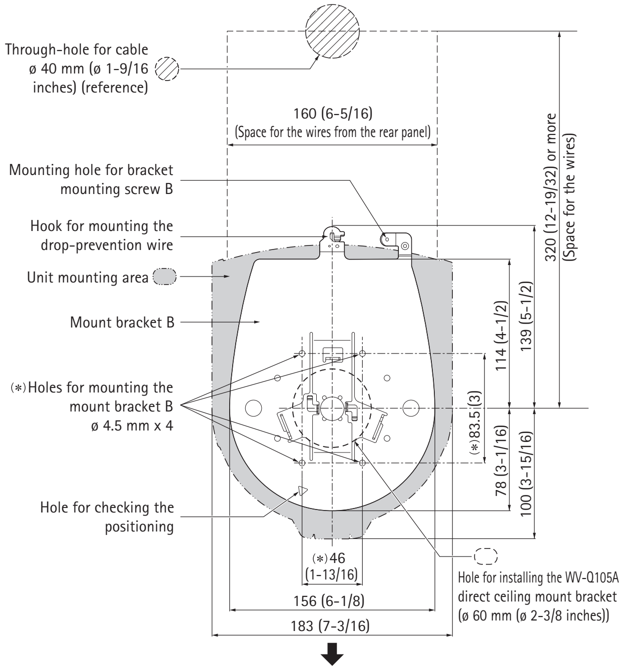


Rear View


Panasonic
Model No./N° De Modèle
AW-HEA10WPJ
Panasonic Corporation
Made in Japan/Fabriqué au Japon
Serial No./N° De Série
B5TEA0001
5 V ⎓ 0.86 A
44-57 V ⎓ 0.14 A (PoE)
(VGN2H62)
A.V.Equip.
LISTED
Intertek
⏻/I
micro SD
INIT
100BT
LINK/ACT
10BASE-T/100BASE-TX
HDMI
USB 2.0 DEVICE
5.0V ⎓ IN
THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES. OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS: (1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE, AND (2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED, INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRED OPERATION.
CAN ICES-3(A)/NMB-3(A)
(VQL3C15)

Bottom View

Unit: mm(inches)


Through-hole for cable
ø 40 mm (ø 1-9/16 inches) (reference)
160 (6-5/16)
(Space for the wires from the rear panel)
Mounting hole for bracket mounting screw B
Hook for mounting the drop-prevention wire
Unit mounting area
Mount bracket B
(*)Holes for mounting the mount bracket B
ø 4.5 mm x 4
Hole for checking the positioning
320 (12-19/32) or more
(Space for the wires)
139 (5-1/2)
114 (4-1/2)
(*)83.5 (3)
78 (3-1/16)
100 (3-15/16)
(*)46
(1-13/16)
156 (6-1/8)
183 (7-3/16)
Hole for installing the WV-Q105A direct ceiling mount bracket
(ø 60 mm (ø 2-3/8 inches))

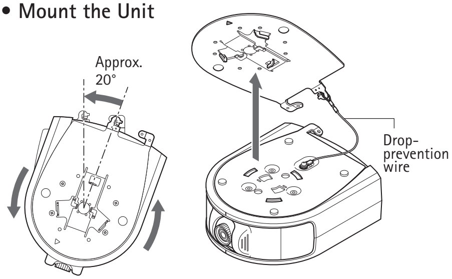
The front panel of the unit on this side.

Ceiling Installation View

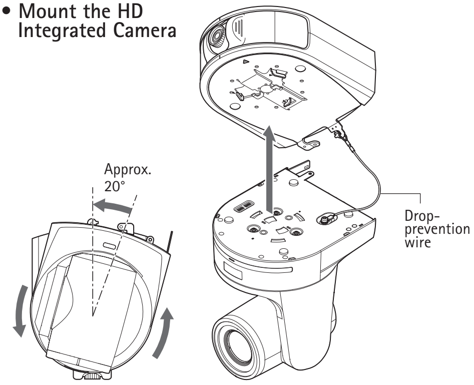
Optimal for both hanging and desktop installation.

The mounting bracket and drop-preventation wire are standard accessories. Ceiling and desktop installation are both possible. Mount the bracket onto the installation surface and then put and turn the main unit on the bracket to be installed.

- Mount the Unit



- Mount the HD Integrated Camera



- The mounting brackets for AW-UE70W/K, AW-UN70W/K, AW-HE40 series, AW-HN40HW/HK, AW-HE130W/K, AW-HN130W/K, AW-HE38HW/HK and AW-HN38HW/HK are different.

* Wiring, mounting, and removal must be done by a qualified technician.
To ensure safety, consult with the dealer from whom you purchased the system.

AW-360C10GJ [360-degree Live Camera Head]

General	
Power Requirements	DC 12 V (power supplied by the AW-360B10GJ Base Unit)
Power Consumption	13.8 W
Operating Temperature	0 °C to 40 °C (32 °F to 104 °F)
Operating Humidity	10% to 80% (no condensation)
Storage Temperature	-10 °C to 60 °C (14 °F to 140 °F)
Storage Humidity	30% to 80%
Weight	Approx. 630 g (1.39 lb) (excluding lens caps)
Dimensions (W x H x D)	96 mm x 180 mm x 96 mm (3-25/32 inches x 7-3/32 inches x 3-25/32 inches) (excluding protrusions and lens caps)

Camera Unit		
Image Sensors		1/2.3-type MOS x 4
Total Number of Pixels		12.76 megapixels x 4
Lens		Fixed focal length Super Fisheye x 4
	F-number	F2.4
	Focal Length	f=1.83 mm
	Focus Distance	Approx. 0.5 m (19-11/16 inches) to ∞
White Balance		Auto, Manual, WB set
Exposure		Auto, Manual Shutter: 1/30 to 1/12000 sec. (when setting NTSC in Capture Mode) 1/25 to 1/12000 sec. (when setting PAL in Capture Mode) Gain: 0 to 30 dB
Minimum Illumination		6 lx (30 dB, 1/30, when setting NTSC in Capture Mode) 6 lx (30 dB, 1/25, when setting PAL in Capture Mode)

Input / Output		
Card	SD card	micro SD card slot x 4 (for firmware update)
Video	Output	CAM1 OUT, CAM2 OUT, CAM3 OUT, CAM4 OUT terminals (connecting to AW-360B10GJ)
Audio	Output	CAM1 OUT, CAM2 OUT, CAM3 OUT, CAM4 OUT terminals (LPCM) (connecting to AW-360B10GJ)
	Input	Built-in mic x 4
External Terminals	Connector	20 pins dedicated interface (connecting to AW-360B10GJ)

AW-360B10GJ [360-degree Live Camera Base Unit]

General	
Power Requirements	DC 12 V (11.5 V to 17 V)
Power Consumption	43.4 W (when connecting to the AW-360 Camera Head) (including the power consumption of the Camera Head)
Operating Temperature	0 °C to 40 °C (32 °F to 104 °F)
Operating Humidity	10% to 80% (no condensation)
Storage Temperature	-10 °C to 60 °C (14 °F to 140 °F)
Storage Humidity	30% to 80%
Weight	Approx. 1.55 kg (3.42 lb)
Dimensions (W x H x D)	210 mm x 55 mm x 200 mm (8-9/32 inches x 2-3/16 inches x 7-7/8 inches)(excluding protrusions)

Stitching Functions	
Stitching Format	2:1 Equirectangular
Minimum Stitching Distance	Approx. 1 m (3-15/16 inches)

Shooting Functions	
White Balance	Auto, Manual, WB set
Exposure	Auto, Manual Shutter: 1/30 to 1/12000 sec. (when setting NTSC in Capture Mode) 1/25 to 1/12000 sec. (when setting PAL in Capture Mode) Gain: 0 to 30 dB

Digital Video	
External Output Video Signal	8 bit RGB

Digital Audio	
External Output Audio Video Signal	48 kHz/16 bit 2 ch

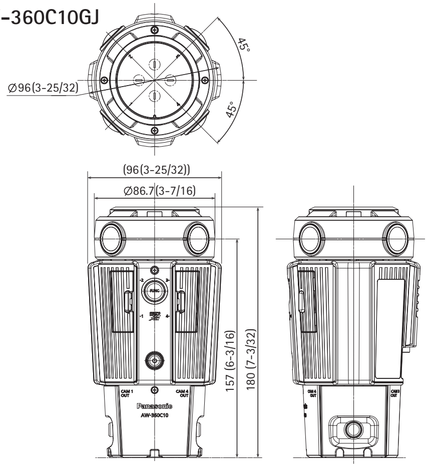
Input /Output		
Video	Input	CAM1 IN, CAM2 IN, CAM3 IN, CAM4 IN terminals (connecting to AW-360C10GJ)
	Output	VIDEO OUT terminal Output format: 2160/29.97p/25.00p 1080/59.94p/50.00p/29.97p/25.00p
Audio	Input	CAM1 IN, CAM2 IN, CAM3 IN, CAM4 IN terminals (connecting to AW-360C10GJ)
	Output	VIDEO OUT terminal, 2ch (LPCM)
External Terminals	CAMERA Connector	20 pins dedicated interface (connecting to AW-360C10GJ)
	LAN	LAN terminal for IP control (RJ-45) (with auto recognition function for straight/cross cables)
	DC IN 12 V	DC 12 V (11.4 V to 12.6 V) EIAJ Type4

Network				
Video Compression Format	Motion JPEG			
Transfer Modes	Resolution		Frequency 59.94 Hz	Frequency 50.00 Hz
	MJPEG	1240 x 620	15 fps, 5 fps	12.5 fps, 5 fps
	*Frame rate configured in this mode may drop depending on use conditions.			
Standard Protocols	IPv4: TCP/IP, UDP/IP, HTTP, HTTPS*, DHCP, DNS, SSL(TLS)* *Not supported for iPad.			
IP Connecting Cable	LAN cable* (Category 5 or above), max.100 m *STP (Shielded Twisted Pair) is recommended.			

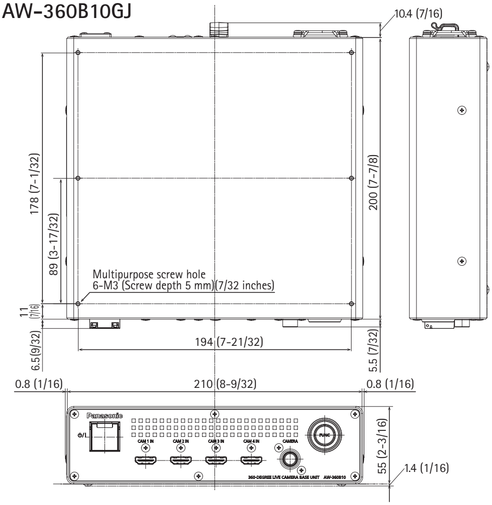
Dimensions

Unit: mm(inches)

AW-360C10GJ



AW-360B10GJ



As of April, 2018

Computer Requirements

Model No.		AW-UE70W/K AW-UN70W/K	AW-HE130W/K AW-HN130W/K	AW-HE40 series AW-HN40HW/HK	AW-HE38HW/HK AW-HN38HW/HK	AW-HR140	AW-HEA10W/K
CPU		When using 1080/60p [59.94Hz] and 1080/50p [50Hz]: Intel® Core™ i7 3.4 GHz or higher recommended Other than above: Intel® Core™ 2 Duo 2.4 GHz or higher recommended	Intel® Core™ 2 DUO 2.4 GHz or more	When using 1080/60p [59.94Hz] and 1080/50p [50Hz]: Intel® Core™ i7 3.4 GHz or higher recommended Other than above: Intel® Core™ 2 Duo 2.4 GHz or higher recommended		Intel® Core™ 2 DUO 2.4 GHz or more	
Network Function		10BASE-T or 100BASE-TX					
Image Display		Resolution: 1024 x 768 pixels or more Color generation: True Color 24-bit or more					
Supported Operating Systems and Web Browsers	For Windows	• Microsoft® Windows® 8.1 Pro (64-bit / 32-bit)[*1] Windows® Internet Explorer® 11.0 • Microsoft® Windows® 8 Pro (64-bit / 32-bit)[*1] Windows® Internet Explorer® 10.0[*1] • Microsoft® Windows® 7 Professional SP1 (64-bit / 32-bit)[*2] Windows® Internet Explorer® 8.0 / 9.0/ 10.0 /11.0[*3]	• Microsoft® Windows® 8.1 Pro (64-bit /32-bit) Windows® Internet Explorer® 11.0 (32-bit)[*1] • Microsoft® Windows® 8 Pro (64-bit /32-bit) Windows® Internet Explorer® 10.0 (32-bit)[*1] • Microsoft® Windows® 7 Professional SP1 (64-bit /32-bit) Windows® Internet Explorer® 11.0/10.0/ 9.0 / 8.0 (32-bit)	• Microsoft® Windows® 8.1 Pro (64-bit / 32-bit)[*1] Windows® Internet Explorer® 11.0 • Microsoft® Windows® 8 Pro (64-bit / 32-bit)[*1] Windows® Internet Explorer® 10.0[*1] • Microsoft® Windows® 7 Professional SP1 (64-bit / 32-bit)[*2] Windows® Internet Explorer® 8.0 / 9.0/ 10.0 /11.0[*3]		• Microsoft® Windows® 10 Pro (64-bit /32-bit) Windows® Internet Explorer® 11.0 (32-bit)[*1] • Microsoft® Windows® 8.1 Pro (64-bit /32-bit) Windows® Internet Explorer® 11.0 (32-bit)[*1] • Microsoft® Windows® 8 Pro (64-bit /32-bit) Windows® Internet Explorer® 10.0 (32-bit)[*1] • Microsoft® Windows® 7 Professional SP1 (64-bit /32-bit)[*2] Windows® Internet Explorer® 11.0/10.0/ 9.0 / 8.0 (32-bit)	• Microsoft® Windows® 8 (64-bit / 32-bit) Windows® Internet Explorer® 10.0 (32-bit) • Microsoft® Windows® 7 Professional SP1 (64-bit / 32-bit)[*2] Windows® Internet Explorer® 10.0 / 9.0 / 8.0 (32-bit)
	For Mac	Mac OS X 10.8 Safari 6.2 Mac OS X 10.9 Safari 7.1 Mac OS X 10.10 Safari 8.0	Mac OS X 10.9 Safari 7.0.2 Mac OS X 10.8 Safari 6.1.2 Mac OS X 10.7 Safari 6.1.2	Mac OS X 10.8 Safari 6.2 Mac OS X 10.9 Safari 7.1 Mac OS X 10.10 Safari 8.0		Mac OS X 10.11 Safari 9.0 Mac OS X 10.10 Safari 8.0.4 Mac OS X 10.9 Safari 7.0.2 Mac OS X 10.8 Safari 6.1.2	Mac OS X 10.8 Safari 6.0 Mac OS X 10.7 Safari 6.0 Mac OS X 10.6 Safari 5.1.7
	For iPhone, iPad, iPod touch	iOS 8.3 Standard browser	iOS 7.1 Standard web browsers	iOS 8.3 Standard browser		iOS Standard browser	—[*4]
	For Android	Android OS 4.4 Standard browser	Android OS Standard web browsers	Android OS 4.4 Standard browser		Android OS Standard web browsers	—

In addition, a CD-ROM drive (to use the operating instructions and various types of software), Adobe® Reader® (to view the operating instructions on the CD-ROM), and a mouse or equivalent pointing device are necessary.

*1: Use the desktop version of Internet Explorer. (Internet Explorer for Windows UI is not supported.)
*2: Windows® XP compatibility mode is not supported.
*3: The 64-bit version of Internet Explorer® is not supported.
*4: Use of the supported applications makes display on the iPad possible.

* Microsoft®, Windows®, Windows® 7, Windows® 8, Windows® 8.1, Windows® 10 and Internet Explorer® are either registered trademarks or trademarks of Microsoft Corporation in the United States and other countries.* Apple, Mac, OS X, iPhone, iPod Touch, iPad, and Safari are registered trademarks of Apple Inc., in the United States and other countries. * Android™ is a trademark of Google Inc.

4K Multi Purpose Camera

AK-UB300GJ

4K Multi Purpose Camera supporting simultaneous output in UHD and HD and equipped with a 2/3 type lens mount

- Two sensitivity modes can be selected (high sensitivity mode/standard mode).
- Equipped with cropping function for selecting up to three setting areas and capturing the desired locations.
- Equipped with a newly developed haze reduction function.
- Transmission with a single cable is possible when an existing output board (3G x 4) is replaced with a 12G or 3G TICO UHD output board.
- Equipped with 4K focus assist function and HD cropping marker.
- Compatible with HD-IP streaming output and IP control.
- Integration with Panasonic's AW series system cameras is possible.
- Equipped with flash band compensation function and scan reverse function.
- Equipped with a wide range of color correction functions (linear matrix, 12-axis color correction, skin color correction, etc.).
- Dynamic Range Stretch (DRS) automatically optimizes contrast.
- The knee/black gamma functions for HDR video enable contrast adjustment of light areas, dark areas, and everything in-between.
- In addition to selecting HDR/SDR output for UHD, HDR and SDR can be both output at the same time for HD. Simultaneous broadcasting is also supported.
- Equipped with intelligent automatic adjustment functions for white balance, gain, etc.
- Serial/IP control possible from AK-HRP200G/AK-HRP1000GJ/AK-HRP1005GJ Remote Operation Panels (ROP) and AW-RP50/AW-RP120G Remote Camera Controller.

* TALLY lights can only be controlled by IP control.

Option Boards

12G Output Board

AK-UHD12G

■ Output: UHD: 2 outputs (12G) or 1 output (3G x 4)
HD: 2 outputs

3G TICO UHD Output Board

AK-UTS03G

■ Output: UHD: 2 outputs (TICO)
HD: 2 outputs

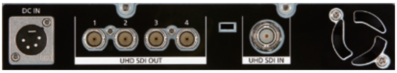
3G TICO & 12G to Quad 3G SDI Converter

AK-UGB01G

This unit converts the signal from 3G TICO UHD Output Board to 3G x 4. It also converts 12G-SDI signal to 3G x 4.

■ Input: 1 input (12G or TICO)
■ Output: 1 output (3G x 4)
Square Division / 2 Sample Interleave (Level A or B)

Rear View



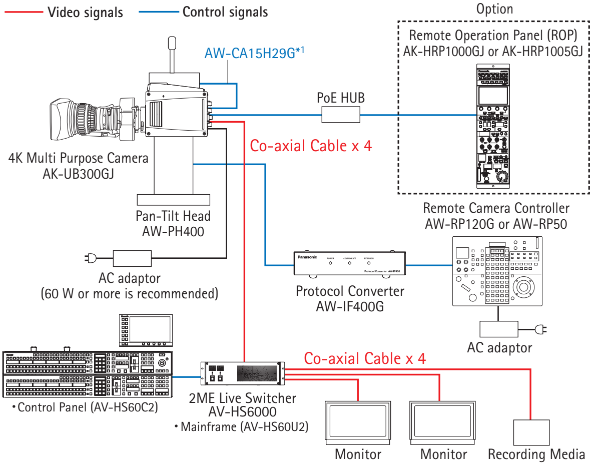
[Multi Purpose Camera Application Examples]

Application :

Sports Broadcasting

High speed and accurate camera operation for sports shooting

The AK-UB300GJ Multi-Purpose Camera for high-resolution and low-moire shooting and the AW-PH400 indoor pan-tilt head for high speed (90°/s) and accurate pan-tilt movement powerfully backs up skillful camerawork required for sports broadcasting.



*1: AW-CA15H29G is not required when a remote operation panel (ROP) is directly connected to AK-UB300GJ.
* Some functions are restricted when AW-PH400 Pan-Tilt Head is connected.

As of April, 2018

Pan-Tilt Head

Model No.		AW-PH400	AW-PH650
Appearance		For indoor use	For outdoor use
Power supply / Power consumption		AC 120 V (60 Hz), AC 220 to 240 V (50/60 Hz) / 145 W	AC 120 V (60 Hz), AC 220 to 240 V (50 Hz) / 120 W
Weight		Approx. 10.2 kg (Approx. 22.5 lb)	Pan-tilt Head: Approx. 19 kg (Approx. 41.9 lb) Housing: Approx. 18 kg (Approx. 39.7 lb) AC adaptor: Approx. 4.2 kg (Approx. 9.3 lb)
Dimensions (W x H x D) (pan-tilt head only, excluding protrusions)		315 mm x 534 mm x 188 mm (12-3/8 inches x 21 inches x 7-3/8 inches)	Pan-tilt Head: 237 mm x 511 mm x 213 mm (9-5/16 inches x 20-1/8 inches x 8-3/8 inches) Housing: 246 mm x 314 mm x 685 mm (9-11/16 inches x 12-3/8 inches x 26-15/16 inches) AC adaptor: 200 mm x 131 mm x 280 mm (7-7/8 inches x 5-3/16 inches x 11-1/6 inches)
Maximum load (including with a camera, a lens and a teleprompter)		Approx. 8 kg (Approx. 17.6 lb)	Approx. 10 kg (Approx. 22.0 lb)
Pan/tilt angle (maximum pan/tilt speed)	Pan	Approx. ±200 ° (90°/s)	Approx. ±160 ° (20°/s)
	Tilt	Approx. ±150 ° (90°/s)	Approx. 50 ° to Approx. -95 ° (20°/s)
Stop accuracy		under ±30 arcseconds (0.008°)	under ±5 arcminutes (0.08°)
Quietness		under NC30 (at 30°/s)	under NC40 (at 20°/s)
Maximum control distance (when using AW-RP120G/AW-RP50)		1500 m (when using the protocol converter AW-IF400G*)	1000 m
Interface RS232C		-	-
Maximum preset memories		50	50
Applicable lens		ENG lenses, MD lenses	ENG lenses, MD lenses
Tally light		Standard equipment (removable)	-
Teleprompter output		Standard equipment	-
Accessory		Camera cable (Approx. 0.6 m)	Multi cable (Approx. 10 m) Camera cable (Approx. 0.4 m) Camera housing
AC Adaptor/Power Cable		AC adaptor built in (power cable (2 m) included)	AC adaptor DC power cable (Approx. 30 m)

* When using AW-PH400 and AW-PH650 with AK-UB300GJ, please contact your regional dealer.

* For more details, see Remote Camera System Optional Products on page 37.

2/3 type Lens

20x HD Zoom Lens

AK-LZ20M85G

- Focal length: 8.5 mm-170 mm (F1.8-F2.7)
  Weight: Approx. 1.41 kg (Approx. 3.1 lb)
  [excluding lens hood]
  Dimensions (W x H x D): 114 mm x 91 mm x 170 mm
  (4-1/2 inches x 3-19/32 inches x 6-11/16 inches)

Cable

Name	Model	Length	Remote Camera	Pan-Tilt Head	Controller	Note
Cable for Indoor Pan-tilt Head Connection	AW-CA15H29G	0.7 m	AK-UB300GJ AK-HC1800G★ AK-HC1500G★	AW-PH360★ AW-PH405☆ AW-PH400	AW-RP120G AW-RP50	Remote camera - Pan-Tilt Head connection*1

*1: To connect the AW-HE870 with the AW-PH360/AW-PH405/AW-PH400/AW-PH650 pan-tilt head, or to connect the AK-HC1500G/AK-HC1800G with the AW-PH650 pan-tilt head, use the camera cable that comes with each pan-tilt Head.

☆Limited Stock ★Discontinued Products

AK-UB300GJ

General	
Power	DC12 V (DC11 V to 17 V)
Power Consumption	40 W (body only, when 3G-SDI x 4 is output) 60 W (maximum power when all accessories are connected and each output terminal is outputting at maximum)
Ambient Operating Temperature	–10 °C to 45 °C (14 °F to 113 °F) (Preheating required under a temperature 0 °C (32 °F) or below)
Storage Temperature	–20 °C to 60 °C (–4 °F to 140 °F)
Ambient Operating Humidity	85% or less (relative humidity)
Weight	Approx. 1.6 kg (3.53 lbs.) (body only)
Dimensions (W x H x D)	Body only 110 mm x 140 mm x 160 mm (4-11/32 inches x 5-17/32 inches x 6-5/16 inches) (excluding protrusions)

Camera Unit	
Pickup Device	11 million pixels, MOS x 1
Lens Mount	2/3-type bayonet
ND filter	CLEAR, 1/4, 1/16, 1/64
Gain	–6, –3, 0, 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, 36 dB
Total Gain	Selectable from 6, 12, 18, 24 dB
Shutter Speed	• [59.94i]/[59.94p] mode:1/100, 1/120, 1/125, 1/250, 1/500, 1/1000, 1/1500, 1/2000 seconds • [29.97p] mode:1/48, 1/50, 1/60, 1/96, 1/100, 1/120, 1/125, 1/250, 1/500, 1/1000, 1/1500, 1/2000 seconds • [23.98p] mode:1/48, 1/50, 1/60, 1/96, 1/100, 1/120, 1/125, 1/250, 1/500, 1/1000, 1/1500, 1/2000 seconds • [50i]/[50p] mode:1/60, 1/100, 1/125, 1/250, 1/500, 1/1000, 1/1500, 1/2000 seconds • [25p] mode:1/48, 1/50, 1/60, 1/96, 1/100, 1/125, 1/250, 1/500, 1/1000, 1/1500, 1/2000 seconds • 180.0 deg, 172.8 deg, 144.0 deg, 120.0 deg, 90.0 deg, 45.0 deg
Synchro Scan Shutter	• [59.94i]/[59.94p] mode:1/61.7 to 1/6130 seconds • [29.97p] mode:1/30.9 to 1/2600 seconds • [23.98p] mode:1/24.7 to 1/2880 seconds • [50i]/[50p] mode:1/51.5 to 1/6250 seconds • [25p] mode:1/25.7 to 1/3130 seconds

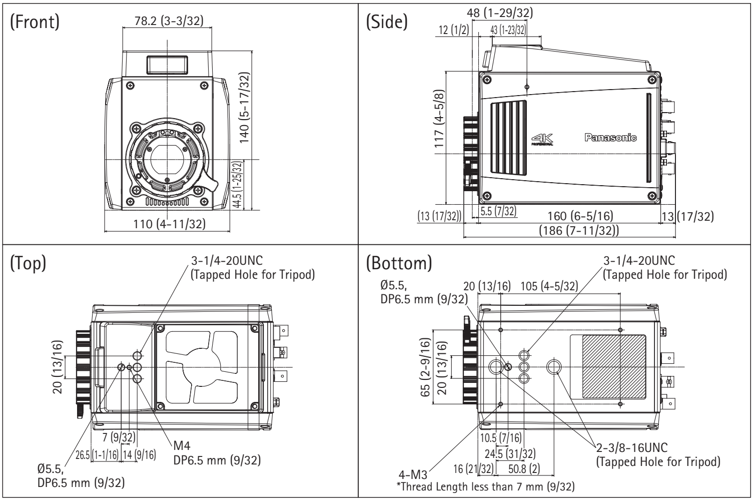
Shutter Open Angle		3 deg to 359.5 deg (can be set in 0.5 deg steps)
Sensitivity		[NORMAL]: F6 (2000 lx, 3200 K, 89.9% reflection, 1080/59.94i)/F7 (2000 lx, 3200 K, 89.9% reflection, 1080/50i) [HIGH SENS]: F10 (2000 lx, 3200 K, 89.9% reflection, 1080/59.94i)/F11 (2000 lx, 3200 K, 89.9% reflection, 1080/50i)
Minimum Subject Brightness		Approx. 0.01 lx (50%, F1.4, +36 dB (gain), +24 dB (total gain), 29.97p/59.94 Hz, 25p/50 Hz)
Image S/N		60 dB (standard) ([DNR] = [ON])
Horizontal Resolution		HD: 1000 TV lines or above (center) UHD: 1800 TV lines or above (center)
Output format	UHD	3840 x 2160/60p, 3840 x 2160/59.94p, 3840 x 2160/29.97p, 3840 x 2160/23.98p, 3840 x 2160/29.97PsF, 3840 x 2160/23.98PsF, 3840 x 2160/50p, 3840 x 2160/25p, 3840 x 2160/25PsF
	UHD_CROP	1080/59.94p_CROP, 1080/59.94i_CROP, 1080/50p_CROP, 1080/50i_CROP
	HD	1080/60p, 1080/59.94p, 1080/59.94i, 1080/29.97PsF, 1080/23.98PsF, 1080/23.98p, 1080/50p, 1080/50i, 1080/25PsF, 720/60p, 720/59.94p, 720/50p

Video Input/Output	
[HD-SDI OUT 1] Terminal	BNC x 1 3G/1.5G HD-SDI: 0.8 V [p-p], 75 Ω
[HD-SDI OUT 2] Terminal	BNC x 1 1.5G HD-SDI: 0.8 V [p-p], 75 Ω
[UHD/HD-SDI OUT 1] Terminal	BNC x 1 3G/1.5G HD-SDI: 0.8 V [p-p], 75 Ω
[UHD/HD-SDI OUT 2] Terminal	BNC x 1 3G/1.5G HD-SDI: 0.8 V [p-p], 75 Ω
[UHD/HD-SDI OUT 3] Terminal	BNC x 1 3G/1.5G HD-SDI: 0.8 V [p-p], 75 Ω
[UHD/HD-SDI OUT 4] Terminal	BNC x 1 3G/1.5G HD-SDI: 0.8 V [p-p], 75 Ω

Other Input/Output	
[G/L IN] Terminal	BNC x 1, 1.0 V [p-p], 75 Ω
[I/F] Terminal	D-SUB x 1, 15-pin
[TALLY OUT] Terminal	4-pin x 1
[IRIS] Terminal	12-pin x 1
[ZOOM/FOCUS] Terminal	12-pin x 1
[LAN] Terminal	100BASE-TX/10BASE-T
[DC IN] Terminal	XLR x 1, 4-pin, DC12 V (DC11 V – 17 V)

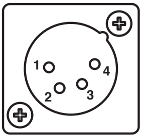
Dimensions

Unit: mm(inches)



Pin Configuration

DC IN connector



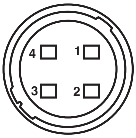
HA16RA-4P(77) (Hirose Electric Co.)

Pin NO.	Signal
1	UNREG GND
2	Not used
3	Not used
4	+12 V

* Use the external power supply with correct polarity.

Tally output connector

The R tally and G tally signals are output from this connector.

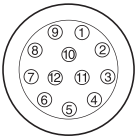


HR10A-7R-4SC (73) (Hirose Electric Co.)

Pin NO.	Signal
1	GND
2	R TALLY (open collector)
3	G TALLY (open collector)
4	UNREG+12 V (max. 0.5 A)

IRIS connector

Used to connect the IRIS control cables of the lens.

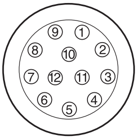


HR10A-10R-12SC (71) (Hirose Electric Co.)

Pin NO.	Signal
1	Return control
2	REC-START/STOP
3	GND
4	Iris manual switching
5	Iris control
6	UNREG +12 V (max. 0.75 A)
7	IRIS-POSI
8	IRIS-G-MAX
9	EXT-POSI
10	Zoom position information
11	LENS-RXD
12	LENS-TXD

Zoom/focus connector

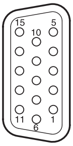
Used to connect the Zoom/focus control cables of the lens.



HR10A-10R-12PC (71) (Hirose Electric Co.)

Pin NO.	Signal
1	Focus control switching
2	Zoom control switching
3	GND
4	Not used
5	Not used
6	Not used
7	Not used
8	Focus control
9	Zoom control
10	Not used
11	COM+V voltage
12	COM-V voltage

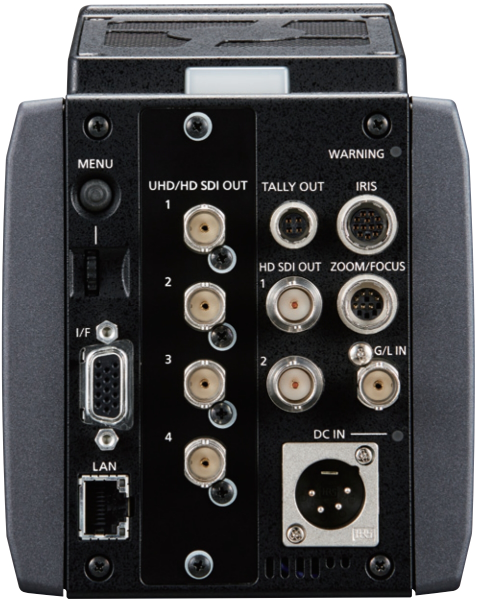
IF connector



D02-M15SAG-20L9E
(Japan Aviation Electronics Industry)

Pin NO.	Signal
1	GND
2	Not used
3	Not used
4	TX_N (EIA422)/ TXD (EIA232) output
5	RX_N (EIA422)/ RXD (EIA232) input
6	Not used
7	G/L signal input
8	Not used
9	TX_P (EIA422) output
10	RX_P (EIA422) input
11	GND
12	Not used
13	GND
14	GND
15	GND

Rear View



2ME Live Switcher –AV-HS6000–

2ME Live Switcher

AV-HS6000

Series Composition

		Model no.
Mainframe	Redundant Power Supply Model	AV-HS60U2
Control Panel	Redundant Power Supply Model	AV-HS60C2
	Redundant Power Supply Model	AV-HS60C4
Menu Panel		AV-HS60C3G
Storage Module		AV-HS60D1G
Chroma Key Software		AV-SFU60G

2 ME | 34 Inputs | 16 Outputs | 4 Keyers Per ME
4 DSK | 4 USK | 4 P-in-P Per ME (dual-use with keyers)
4ch MultiViewer | 16 Aux Buses | Redundant Power Supply

2ME Live Switcher with complete system adaptability, intuitive operations, high reliability, and advanced 4K compatibility*

- Supports a range of video formats including, 2160/59.94p, 50p (4K mode)*, 1080/59.94p, 50p (3G mode), 1080/59.94i, 1080/50i, 480/59.94i and 576/50i.
- 32 SDI and two DVI-D inputs, and 16 SDI with two outputs.
- All inputs are provided with a 10 bit frame synchronizer. Eight inputs equipped with color corrector. Four inputs equipped with frame delay.
- Four outputs equipped with color correctors, and two with downconverters.
- 4 ch of 3D DVE and 2 ch of 2D DVE systems are provided to support background and keys for each ME.
- A luminance key, linear key, chroma key, full key, and PinP are provided for 4 ch per ME (8 ch in total), plus 4 ch of DSK and 4 ch of upstream key (USK).
- Comes with event memory, shot memory and macro memory for recording complex operations.
- Multi-Selection Panel for each ME. The switch-style panel helps in operations by providing a direct, tactile response.
- Crosspoint buttons can be grouped with any eight colors, and bitmap characters can be displayed on the label display panel (OLED).
- 10.1-type(256.5 mm) Menu Panel with touch screen allows quick and easy menu operation
- Operation of up to three control panels is possible through an IP connection.
- System settings and memory information can be stored on an SD card, PCs, and optional storage module.
- Functions are scalable using plug-in software.

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* Firmware Ver. 4 or later required. For details, see "Service and Support" on the Panasonic website (https://pro-av.panasonic.net/en/).

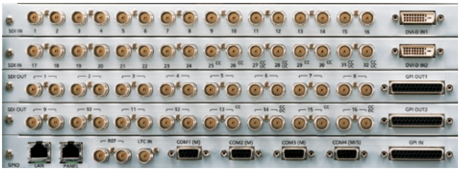
Control Panel

Control Panel AV-HS60C2
- 24 XPT, Width: 980 mm (38-19/32 inches)

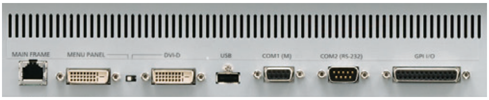
Control Panel AV-HS60C4
- 16 XPT, Width: 656 mm (25-13/16 inches)

Rear View

Mainframe



Control Panel



As of April, 2018

3G/4K format compatibility (Advanced support for high-definition)

This advanced switcher can be used to produce 4K[*1] high-definition video as well as HD/SD-SDI and 3G-SDI by switching between three use modes.
*1: Firmware Ver. 4 or later required. For details, see "Service and Support " on the Panasonic website (https://pro-av.panasonic.net/en/).

Functions supported by format

		Standard mode	3G mode	4K mode
Input function	Number of SDI inputs	32	16 (3G Level A / B[*2])	8 (SQD / 2SI Level A / B[*2] × 4)
	Number of DVI inputs	2	Not possible	Not possible
	Number of up-converter channel	4	-	8
	Dot by Dot	Possible	-	-
	Number of delay function channel	4	2	-
	Number of color corrector channel	8	4	-
	Number of upstream keyer channel	4	2	-
Output function	Number of SDI output	16	8	3 (SQD 3G Level B x 4)
	Number of down-converter channel	2	2[*3]	2[*4]
	Number of color corrector channel	4	2	-
ME1 function	Number of utility bus	2	1	1
ME2 function	BKGD transition pattern	MIX / WIPE / DVE	MIX / WIPE	MIX / WIPE
	IMAGE	Possible	Not possible	Not possible
	Number of keyer	4	Not possible	Not possible
	Number of utility bus	2	Not possible	Not possible
Number of DSK keyer		4	2	2[*5]
Number of still image (Still) memory channel		4	2	2[*5]
Moving image (Clip) memory function	Number of channel	4	2	2[*5]
	Recording time per channel (standard image quality)	Approximately 60 seconds	Approximately 30 seconds	Approximately 30 seconds
	Recording time per channel (high image quality)	Approximately 30 seconds	Approximately 15 seconds	Approximately 15 seconds
Number of MultiViewer		4	2	2[*5]
Number of AUX		16	8	8[*5]

*2: When FS function is active and 3G-SDI Level A signal is input, it is converted to Level B signal to perform signal processing. When FS function is off and 3G-SDI Level A signal is input, a black screen will be displayed. FS function is always ON when in 4K mode. *3: SDI OUT 14 outputs down-converted HD-SDI signal of SDI OUT 13, and SDI OUT 16 outputs down-converted HD-SDI signal of SDI OUT 15. *4: Same video output on SDI OUT 13(3GSDI) and SDI OUT 14(HD-SDI) . Same video output on SDI OUT 15(3G-SDI) and SDI OUT 16 (HD-SDI) . *5: 2K resolution video scaled to 4K resolution.

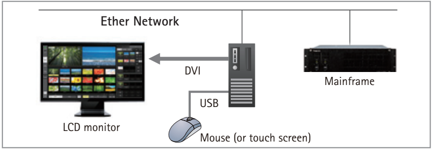
Easy Direct Switching by Touch and Mouse Operations

Software Control Panel AV-SF6000G
(Free download for Mac and Windows)

The AV-HS6000 control panel is also available as a PC based application software. Equipped with the MJPEG codec, it allows display of video and image in the application. Intuitive and simple operations while viewing source video or using the display as a sub-panel is possible.

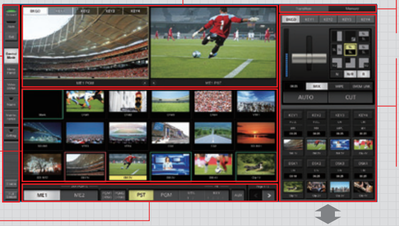
* For information on downloading software control panel, see "Software download" on the Panasonic website (https://pro-av.panasonic.net/en/).

System Composition Example



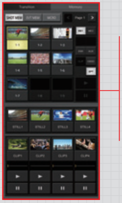
Mode selection part
- Switches between Control Mode, Menu Panel, and Video Status modes.
- Displays mainframe communications status and error status.
- Switches between connected mainframes by inputting the IP address.
- Allows free arrangement of sources displayed on the input and output windows.

Control Mode screen



Operation menu part
- Switches ME to be operated.
Selects PST, PGM, UTIL 1 to 2, and KEY 1 to 4.

Source assignment part
- Selects movie to be assigned to the bus selected with operation menu part.
- A total of 54 sources can be displayed on three pages by displaying 18 sources on one page and switching pages.
- Displays tally status in red and green frames.



Input and output windows
- Displays PGM and PST for the selected ME.
- Displays DSK PGM1 for PGM when PGM (+DSK) button is selected.
- Displays Next Transition setting status superimposed on window for PST.

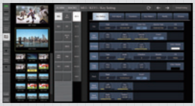
Page button
- Switches display of operation panel part.

Operation panel part-1
- Operates transitions (fader, AUTO, CUT).
- Selects key type and transition type for KEY 1 to 4 and sets transition time.
- Sets key type for DSK 1 to 4.
- Displays thumbnail for source assigned to KEY and DSK.

Operation panel part-2
- Controls shot memory, event memory, and macro memory.
- Video memory (still/clip) can be controlled.
Stills and clips can be loaded from the built-in SSD or a PC.

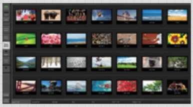
System Composition Example

Menu Panel screen



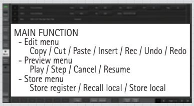
Displays menu panel operation display, showing ME1, ME2 and PGM on left side. It is possible to operate menu panel or to check the result while checking the PGM output.

Video Status screen



Video sources of all inputs, all outputs, ME/DSK/AUX buses, and MultiView screen are displayed in a list.

Macro Edit screen



MAIN FUNCTION
- Edit menu
  Copy / Cut / Paste / Insert / Rec / Undo / Redo
- Preview menu
  Play / Step / Cancel / Resume
- Store menu
  Store register / Recall local / Store local

Added editing function which are adding and deleting operations, wait time setting, etc., recorded Macro memory for more convenience.

Multi-Format Live Switcher

AV-HS450

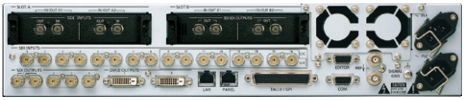
1 ME | Max. 20 Inputs*1 | Max. 10 Outputs*2 | 1 Keyer | 2 DSK
2 P-in-P | 2ch MultiViewer | 4 Aux Buses | Redundant Power Supply

This high-performance switcher handles the switching needs of broadcast studios, OB vans and multi-camera systems anywhere.

- 16 SDI inputs, four SDI outputs and two DVI-D outputs.
- Luminance and chroma keying, two DSK channels, two P-in-P buses and two DVE channels.
- Supports a variety of HD/SD formats, including 1080/24PsF,*3 as standard.
- A wide range of optional boards also allows the input and output of analog component and various other signals. (For details, see the list of optional boards below.)
- Equipped with an SD/HD up-converter function for four standard inputs, and a dot by dot function for 16 standard inputs.
- A video processing function with color correction is also provided for eight inputs.
- Aux 1 bus equipped with Mix transition function.
- Panel layout offers direct control of functions with 16 crosspoint buttons and pattern select buttons.
- Six user buttons.
- Mounting the optional AV-HS04M7D 3D SDI Output Board provides 3D compatibility. Switch up to Nine 3D Image Inputs.

Rear View

Mainframe



Control Panel

Live Switcher

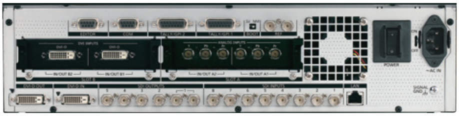
AV-HS410

1 ME | Max. 13 Inputs*1 | Max. 10 Outputs*2 | 1 Keyer
1 DSK | 2 P-in-P | 1ch MultiViewer | 4 Aux Buses

This compact, integrated unit includes levels of performance and function that approach many high-end switchers.

- Eight SDI inputs, one DVI-D input, five SDI outputs and one DVI-D output.
- Supports a variety of HD/SD formats, including 1080/24PsF, as standard.
- A wide range of optional boards also allows the input and output of analog component and various other signals. (For details, see the list of optional boards below.)
- Equipped with an SD/HD up-converter function for four standard inputs, and a dot by dot function for eight inputs.
- A video processing function with brightness, pedestal level, saturation, and color phase correction is also provided for eight inputs.
- The Memory Preview function lets you preview shot memory and event memory content. It allows image effects to be easily confirmed while on-air with this 1 M/E switcher.
- Two inputs for still (STILL) and moving (CLIP) images can be saved in Video Memory, and selected as bus footage.
- A 178 mm (seven inches) color LCD monitor with WVGA (800 x 480) resolution is built into the control panel. It can be switched to a wide variety of display modes, including setting menus, image monitoring and waveform/vectorscope.
- 12 crosspoint buttons in each A bus and B bus (for a maximum of 22 with the Shift function) provide direct control. Also comes with eight user buttons.
- Plug-ins allow flexible expansion of software-based functions.

Rear View



Input Option Boards

AV-HS04M1
SDI Input Board
SDI (HD/SD) x 2 (BNC)
(Built-in Up-converter)

AV-HS04M2
Analog Component Input Board
HD/SD Analog Component x 2 (Y/P_B/P_R)
(Built-in Up-converter)

AV-HS04M3
DVI Input Board
DVI-I x 2 (Built-in Scaler)

AV-HS04M6
Analog Composite Input Board
Analog Composite x 2
(Built-in Up-converter)

AV-HS04M8
Full HD DVI Input Board
DVI-D x 2
(compatible with WUXGA)

Output Option Boards

AV-HS04M4
Analog Output Board
HD/SD Analog Component x 2
(Y/P_B/P_R)

AV-HS04M5
DVI/Analog Output Board
DVI-I x 1, HD/SD Analog
Component x 1(Y/P_B/P_R)

AV-HS04M7
SDI Output Board
SDI (HD/SD) x 2
(Each one has 2 outputs)
(BNC) (Built-in Down-converter)

AV-HS04M7D
3D SDI Output Board
SDI (HD/SD) x 2
(Each one has 2 outputs)
(BNC) (Built-in Down-converter)

Compact Live Switcher

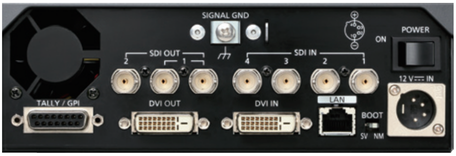
AW-HS50

1 ME
5 Inputs
3 Outputs
1 Keyer
1 P-in-P
1ch MultiViewer
1 Aux Buses

Highly functional live switcher in compact, half-rack-size package.

- Four SDI inputs, one DVI-D input, two SDI outputs and one DVI-D output.
- Equipped with an SD/HD up-converter function for two inputs.
- All four inputs equipped with a dot by dot function and a video processing function for brightness, pedestal level, saturation and color phase correction.
- Transitions: 13 wipe patterns and mixes.
- Two 8 bit still images can be saved in Frame Memory, and used as bus footage.
- Five crosspoint buttons in each A bus and B bus (for a maximum of 10 with the Shift function), a Cut button, a P-in-P button, a Key button and an FTB button allow direct control with this simple panel layout.
- two user buttons (for a maximum of four with the Shift function).
- Linking the AW-HS50 to the optional AW-RP50 Remote Camera Controller with an IP connection*4 over a network makes remote operation of Panasonic HD Integrated Cameras and other devices possible.

Rear View



Live Production Center

AV-HLC100 NEW

An all-in-one switcher that combines the functions of a live switcher, remote camera controller, and audio mixer.

- Compliant with the NDI and NDI I HX standards*5, enabling video, audio, camera control, and power supply*6 via a single LAN cable.
- Supports a wide range of video formats*7 including 3G-SDI video in 1080/59.94p and 1080/50p, and enables cross-conversation between 1080p/1080i and 720p. SDIx4 or SDIx3/HDMIx1 can be selected, and it also has 8ch of IP inputs.
- Up to eight video systems can be assigned to the crosspoint buttons on the control panel for single-click operations.
- Our HD Integrated Cameras*8 can be connected without external IP decoders.
- Supports RTMP (Real-Time Messaging Protocol), enabling footage to be directly uploaded to live streaming services such as YouTube Live and Facebook Live. Streamed footage can also be recorded at the same time.
- Clip player and still image store included to enable video and still images to be used as source data.
- Includes a title function that provides a wide range of design templates where text attributes such as font and color can be edited.
- Supports PinP in a maximum of one screen. Also includes a vast range of over 190 transition patterns, including 3D-DVE.
- Enables mixing of embedded audio, line input and microphone input.
- Footage from a Skype TX video channel can be used as an input sourced for live broadcasts.

Rear View

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*1: When using two input boards. *2: When using two output boards. *3: 1080/24PsF (or 23.98PsF) input signals are supported only by the standard input terminals of the AV-HS450. These signals are not supported by the optional AV-HS04M1/M2/M3/M4/M5/M6/M7/M7D/M8 boards. *4: Only one AW-RP50 can be connected to the switcher via an IP connection. And connection is not possible with a public network. *5: Compliant with the NDI and NDI I HX standards from NewTek. *6: A PoE+ hub is required for the power supply. *7: The 1080/59.94p and 1080/50p formats are not supported for HDMI input. *8: NDI I HX compatible models. See our website for the models compatible with our remote camera system (https://pro-av.panasonic.net/en/).

Live Switcher Specification Comparison

		AV-HS6000*1	AV-HS450
ME		2ME	
Video Format	**4K/3G**	2160/59.94p (4K mode)*2, 2160/50p (4K mode)*2, 1080/59.94p (3G mode), 1080/50p (3G mode)	—
	HD	1080/59.94i, 1080/50i, 1080/24PsF, 1080/23.98PsF, 1080/25PsF, 1080/29.97PsF, 720/59.94p, 720/50p	1080/59.94i, 1080/50i, 1080/24PsF*4 , 1080/23.98PsF*4, 720/59.94p, 720/50p
	SD		
Video Processing	**Y:P$_B$:P$_R$**	4 : 2 : 2 10 bit	4 : 2 : 2 10 bit (8 bit for FMEM)
	RGB		
Video Input	**Input**	34 signal lines	16 signal lines, standard 20 signal lines, maximum
	SDI	32 lines, BNC x 32 HD (SMPTE292M)/3G (SMPTE424M)/SD (SMPTE259M) standard, 0.8 V [p-p] ± 10 %(75 Ω)	Standard SDI: 16 lines, BNC x 16 HD (SMPTE292M)/SD (SMPTE259M) standard, 0.8 V [p-p] ±10 % (75 Ω)
	DVI-D/DVI-I	2 signal line DVI-D x 2 Digital RGB: XGA (1024 x 768), WXGA (1280 x 768), SXGA (1280 x 1024), WSXGA+ (1680 x 1050), UXGA (1600 x 1200), WUXGA (1920 x 1200) Vertical frequency: 60 Hz Video format inputs: 1080/59.94p, 1080/50p, 1080/59.94i, 1080/50i, 720/59.94p, 720/50p	—
	Optional Board	—	Maximum of 4 inputs (IN A1, A2, B1, B2)(Up to 2 optional
Video Output	**Output**	16 signal lines	6 signal lines, standard 10 signal lines, maximum
	SDI	16 lines, BNC x 32 (2 distributed outputs per line) HD (SMPTE292M)/3G (SMPTE424M)/SD (SMPTE259M) standard, 0.8 V [p-p] ± 10 %	Standard SDI: 4 lines, BNC x 5 (2 output distribution for OUT 1) HD (SMPTE292M)/SD (SMPTE259M) standard, 0.8 V [p-p] ±10 % (75 Ω)
	DVI-D	—	Standard DVI-D: 2 lines, DVI-D x 2, (OUT 5, 6) Digital RGB: XGA (1024 x 768), WXGA (1280 x 768), SXGA (1280 x 1024), WSXGA+ (1680 x 1050), UXGA (1600 x 1200), WUXGA (1920 x 1200) Vertical frequency: 60 Hz Video format outputs: 1080/50P, 1080/59.94P (Analog output signals are not supported)
	Optional Board	—	Maximum of 4 outputs (OUT A1, A2, B1, B2)(Up to 2 optional
Reference Input/Output		Mainframe BNC GENLOCK mode: Black burst or Tri-level Sync input signals (with loop-through) • Same field frequencies as those of the system formats supported. • With the 1080/23.98PsF, 1080/24PsF format, only GENLOCK mode supported. • With the 1080/23.98PsF format, black burst with 10F-ID (SMPTE318M standard met) or TRI signals supported. Internal sync mode: Black burst output signals x 2	
Interface	**PANEL/MAIN-FRAME**	RJ45 x 1, Compatible with 100Base-TX and AUTO-MDIX (to connect between the mainframe and the control panel)	RJ45 x 1, 100 Mbps (to connect between the mainframe and the control panel)
	EDITOR	—	Mainframe, D-sub 9 pin x 1, RS-422 (GVG protocol compatible)
	COM	Mainframe, D-sub 9 pin x 4, RS-422*3 Control Panel: D-sub 9 pin x 2 (RS-422 x 1, RS-232C x 1)	Mainframe, D-sub 9 pin x 1, RS-422 (pan-tilt system control)
	TALLY/GPI	Mainframe: D-sub25 pin x 1 GPI IN x 18 (general-purpose, photocoupler sensing), GPIOUT x 48 (selected from general purpose, tally, Open collector output), ALARM OUT x 1 (open collector output, negative logic) Control Panel: D-sub 25 pin x 1 GPI IN x 8 (general-purpose, photocoupler sensing), GPIOUT x 10 (selected from general purpose, tally, Open collector output), ALARM OUT x 1 (open collector output, negative logic)	Mainframe: D-sub 50 pin x 1 GPI IN x 8 (general-purpose, photocoupler sensing), GPI OUT x 31 (general-purpose, selected from R/G tally, open collector output), ALARM OUT x 1 (open collector output, negative logic) Control Panel: D-sub 25 pin x 1 GPI IN x 8, GPI OUT x 8, ALARM OUT x 1
	LAN	Mainframe: Compatible with 100Base-TX and AUTO-MDIX (For IP control)	Mainframe, RJ45 x 1, 10 BASE-T/100 BASE-TX
Control Panel		Discrete (menu DVI-D output; USB mouse menu control)	Discrete
Menu Panel		Discrete	
Multi-Selection Panel		Provided for each ME	
Removable Media		SD Memory Card Supported by the control panel, Capacity: Maximum 32 GB (SDHC Memory Card compatible) Still image file/movie clip file/Project file (including memories): Loading/saving, Software: Loading, Log data: saving	SD Memory Card Supported by the control panel, Capacity: Maximum 32 GB (SDHC Memory Card compatible) Still image file: Loading/saving, setup data: backup

[1] For information on 4K/3G mode, see page 59.

[2] Firmware Ver. 4 or later required. For details, see “Service and Support” on the Panasonic website (https://pro-av.panasonic.net/en/).

As of April, 2018

	AV-HS410	AW-HS50
1ME		
	—	—
	1080/59.94i, 1080/50i, 1080/24PsF*4, 1080/23.98PsF*4, 720/59.94p, 720/50p	1080/59.94i, 1080/50i, 1080/24PsF, 1080/23.98PsF, 720/59.94p, 720/50p
480/59.94i, 576/50i		
	4 : 2 : 2 10 bit (8 bit for video memory)	4 : 2 : 2 10 bit (8 bit for FMEM)
4 : 4 : 4 , 8 bit		
	9 signal lines, standard 13 signal lines, maximum	5 signal lines
	Standard SDI: 8 lines, BNC x 8 (IN 1 to 8) HD (SMPTE292M)/SD (SMPTE259M) standard, 0.8 V [p-p] ±10 % (75 Ω)	4 lines, BNC x 4 HD (SMPTE292M)/SD (SMPTE259M) standard, 0.8 V [p-p] ± 10 %(75 Ω)
	Standard DVI-D: 1 signal line, DVI-D x 1 Digital RGB: XGA (1024 x 768), WXGA (1280 x 768), SXGA (1280 x 1024), WSXGA+(1680 x 1050), UXGA (1600 x 1200), WUXGA (1920 x 1200) Vertical frequency: 60 Hz Video format inputs: 1080/50p, 1080/59.94p (Analog input signals are not supported)	
boards may be inserted into the 2 input/output optional slots)		—
	6 signal lines, standard 10 signal lines maximum	3 signal lines
	Standard SDI: 5 lines, BNC x 6 (2 output distribution for OUT 1) HD (SMPTE292M)/SD (SMPTE259M) standard, 0.8 V [p-p] ±10 % (75 Ω)	SDI: 2 lines, BNC x 3 (2 output distribution for OUT1) HD (SMPTE292M)/SD (SMPTE259M) standard, 0.8 V [p-p] ±10 % (75 Ω)
	Standard DVI-D: 1 lines, DVI-D x 1 Digital RGB: XGA (1024 x 768), WXGA (1280 x 768), SXGA (1280 x 1024), WSXGA+ (1680 x 1050), UXGA (1600 x 1200), WUXGA (1920 x 1200) Vertical frequency: 60 Hz Video format outputs: 1080/50p, 1080/59.94p, 1080/50i, 1080/59.94i, 720/50P, 720/59.94p (Analog output signals are not supported)	Standard DVI-D: 1 lines, DVI-D x 1 Digital RGB: XGA (1024 x 768), WXGA (1280 x 768), SXGA (1280 x 1024), WSXGA+ (1680 x 1050), UXGA (1600 x 1200), WUXGA (1920 x 1200) Video format outputs: 60 Hz Video format outputs: 1080/50p, 1080/59.94p (Analog output signals are not supported)
boards may be inserted into the 2 input/output optional slots)		—
	GENLOCK mode: Black burst or Tri-level Sync input signals (with loop-through) • Same field frequencies as those of the system formats supported. • With the 1080/24PsF format, only GENLOCK mode supported. • With the 1080/23.98PsF format, black burst with 10F-ID (SMPTE318M standard met) or TRI signals supported. Internal sync mode: Black burst output signals x 2	—
	—	
	D-sub 9 pin x 1, RS-422	—
	D-sub 9 pin x 1, RS-422	—
	D-sub15 pin x 2 GPI IN x 8 (general-purpose, photocoupler sensing), GPI OUT x 19 (general-purpose, selected from R/G tally, open collector output), ALARM OUT x 1 (open collector output, negative logic)	D-sub 15 pin x 1, GPI IN x 5 (photocoupler sensing), GPI OUT x 7 (open collector output, negative logic)
	RJ45, 10 BASE-T/100 BASE-TX	
	Integrated	
Integrated		
—		
	SD Memory Card Capacity: Maximum 32 GB (SDHC Memory Card compatible) Still image file/movie clip file/shot memory/ event memory: Loading/saving, Setup data: backup	—

*3: Switchable between master connection and slave connection via menu
*4: 1080/24PsF and 23.98PsF are not supported with the AV-HS04M option board series.

Live Switcher Function Comparison

		AV-HS6000	AV-HS450
BKGD	Wipe	17	12
	Squeeze	16	11
	Slide	8	8
	3D	13	12
	2ch Squeeze	7	4
	2ch Slide	8	4
	2ch 3D	1	4
	Transition Type	Cut, Mix, Wipe (including DVE), EMEMLINK	Cut, Mix,
	Image	Image effect: PGM/A, PST/B Bus	Effect: Mosaic, Defocus, Mono, Paint
Keyer	Number of Keys	8	
	Key Type	Linear key, Luminance key, Chroma key*1, Full key	Linear key, Luminance key, Chroma key, Full key
	Transition Type		Cut, Mix, Wipe (including DVE)
	Wipe/DVE Pattern	Wipe x 12, Squeeze x 11, Slide x 9, 3D x 12	
USK	Number of Keys	4	
	Key Type	Linear key, Luminance key, Full key	
	Transition Type	Cut	
DSK	Number of Keys	4	2
	Key Type		Linear key, Luminance key
	Transition Type	Cut, Mix	
P in P	Number of PinP	8*2	
	Transition Type	Wipe (SL/SQ) / Mix	
AUX Bus		AUX Bus 1 to 16*3	AUX Bus
Input Function	Frame Synchronizer	SDI IN 1 to 32, DVI IN1, 2	SDI IN 1 to 16*7
	Freeze	SDI IN 1 to 32, DVI IN1, 2	SDI IN 1 to 16*7
	Frame Delay	SDI IN 27, 28, 31, 32	
	Dot by Dot	SDI IN 1 to 32	SDI IN 1 to 16
	Up-Converter	SDI IN 27, 28, 31, 32	SDI IN 13 to 16*7
	Color Corrector	SDI IN 25 to 32	SDI IN 9 to 16
	Video Processing	SDI IN 25 to 32	SDI IN 9 to 16
Output Function	MultiViewer	4 ch, Labels, Tally indication, Audio level meter, Safety marker, Split-screen (10 Patterns: 4, 5a/5b, 6a/6b, 9, 10a/10b, 12 and 16 sections)	2 ch, Labels, Tally indication, Split-screen (4 Patterns: 4, 9, 10 and 16 sections)*8
	Down-Converter	SDI OUT 14, 16	SDI output
	Color Corrector	SDI OUT 13 to 16	
	Other Function	Phase adjustment, Chroma key sample marker	OSD (PVW and several MULTI outputs), Phase adjustment, Chroma key sample marker
Memory Function	Frame Memory	—	4 channels (save to flash memory on mainframe; data retained even when power off)
	Video Memory	Still (still images): 4 systems (save to volatile memory on mainframe; data erased when power off)*4 Clip (movie clips): 4 systems (save to volatile memory on mainframe; data erased when power off)*4	—
	Shot Memory	Register 81 shots (effect dissolve function)	Register 10 shots
	Event Memory	Register 64 events in 81 memories	—
	Macro Memory	Register 81 memories (can remember a total of 3,000 procedure operations)	
	BKGD/Wipe Memory	—	Register 10 memories
	P in P Memory	—	Register 10 memories
	Camera Memory	—	Register 10 memories *9
	Key Preset	Register 4 presets for 1 keyer	
Other Function	Project Management Function	✓ (Save/retrieve current settings and memory data as batch file)	
	Plug-in Function	✓ (Register plug-in software created with SDK to add functions/ external interface function)	—
	Redundant Power Supply	✓ (Redundant power model for mainframe and control panel)	✓
	Multiple Panel Connection	✓ (1 mainpanel, 2 subpanels)*5	
	Web Browser Function	✓ (Menu operations from local PC)*5	

*1: Chroma keying only available on the Key 1 bus; additions possible by installing the optional AV-SFU60G.
*2: Dual use with keyer; Rotation available only on Key 1 and Key 2 buses.
*3: Mix transition available on Aux 1-4 buses.
*4: Data in volatile memory can be exported and saved on the internal mainframe storage (optional), an SD memory card or LAN port-connected PC.
*5: The subcontrol panel and local PC connects to the mainframe LAN port.
*6: Mix transition available on Aux 1 buses.

As of April, 2018

AV-HS410	AW-HS50
16	13
15	—
8	—
12	—
—	—
—	—
—	—
Wipe(including DVE)	Cut, Mix, Wipe
—	
1	
Linear key, Luminance key, Chroma key, Full key	Linear key, Luminance key, Chroma key*10
	Mix
Wipe x 16, Squeeze x 16, Slide x 8, 3D x 12	—
—	
1	—
	—
Mix	—
2	1
Mix	
1 to 4*6	AUX Bus 1
SDI IN 1 to 8 (IN 9 is DVI IN)*7	SDI IN 1 to 4, DVI IN (always-on)
SDI IN 1 to 8 (IN9 is DVI IN)*7	SDI-IN1 to 4, DVI-IN
—	
SDI IN 1 to 8	SDI IN 1 to 4
SDI IN 5 to 8*7	SDI IN 3 , 4
—	
SDI IN 1 to 8*7	SDI IN1 to 4
1 ch, Labels, Tally indication, Audio level meter, Safety marker Split-screen (9 Patterns: 4, 5a/5b, 6a/6b, 9, 10a/10b and 16 sections)	1 ch*11, Labels, Tally indication, Audio level meter, Split-screen (8 Patterns: 4, 5a/5b, 6a/6b, 9 and 10a/10b sections)
board(Option) only	—
—	
Phase adjustment, Chroma key sample marker	OSD [Single Screen Display: SDI-OUT 2,DVI-OUT (unshown on SDI-OUT 1)], Chroma key sample marker, Audio Level Meter: SDI embedded audio (group1/ 1 ch, 2 ch)
—	2 channels*12 (save to 1 internal flash memory; data retained even when power off)
2 systems: still images and movie clips (save to flash memory; data retained when power off)	—
(effect dissolve function)	—
Register 10 memories	—
—	
—	Register 4 memories
—	Register 4 memories (effect dissolve function)
—	
—	
—	
✓	—
—	
—	
—	

---

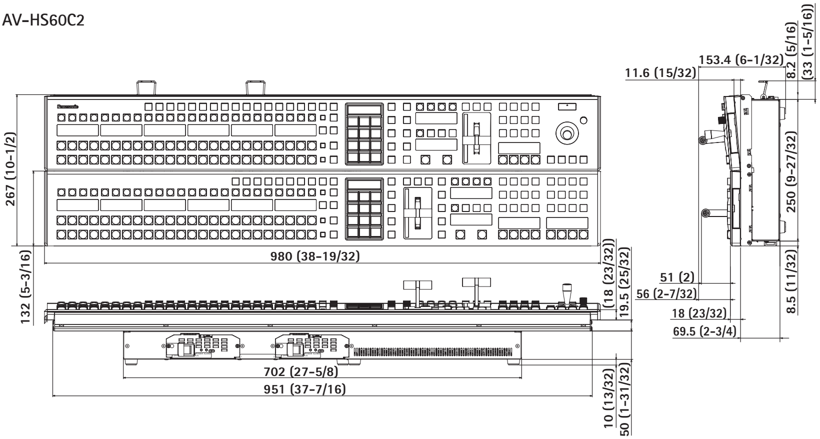
*7: Specifications for IN A1, A2, B1, and B2 depend on the specs of the mounted optional equipment.
*8: Maximum 20 channels may be simultaneously displayed on two screens.
*9: May store and recall up to 10 presets (per camera) with current Panasonic pan-tilt systems.
*10: May also be used for DSK applications by changing the key layer.
*11: OSD, MV frames, Labels, Tally indications, Audio Level Meters, and Camera setting information are not shown on SDI-OUT 1.
*12: OSD, MV frames, Labels, Tally indications, Audio Level Meters, and Camera setting information for MultiViewer Display are not stored in the Frame Memory.

Live Switcher Dimensions

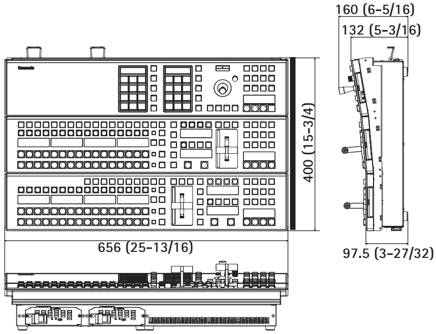
AV-HS6000

Unit: mm(inches)

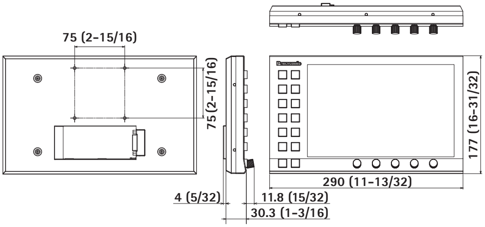
Control Panel AV-HS60C2



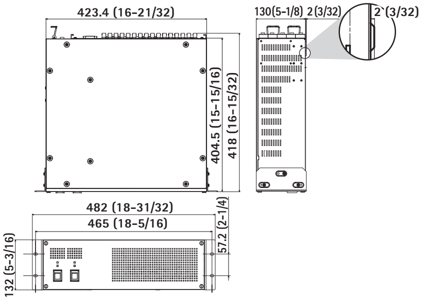
Control Panel AV-HS60C4



Menu Panel



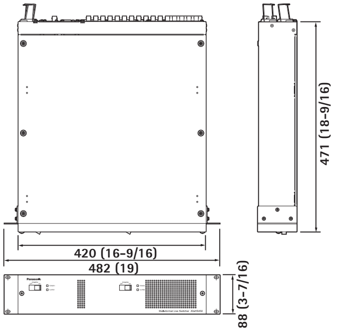
MainFrame



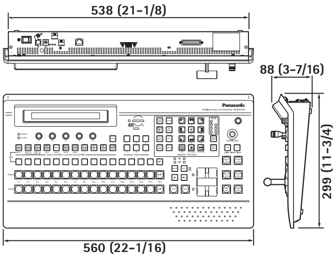
AV-HS450

Unit: mm(inches)

MainFrame

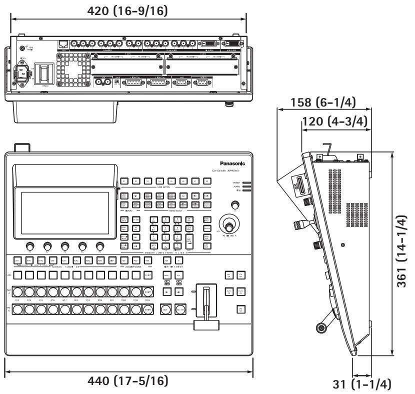


Control Panel



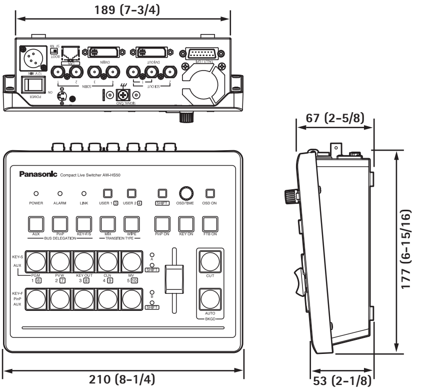
AV-HS410

Unit: mm(inches)



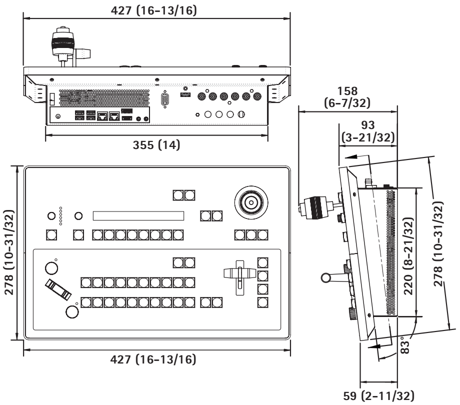
AW-HS50

Unit: mm(inches)



AV-HLC100

Unit: mm(inches)



AV-HS6000

■Mainframe [AV-HS60U2P/E]

General	
Power Supply	AC100 V to 240 V, 50 Hz/60 Hz (AV-HS60U2 supports redundant power supply)
Power Consumption	110 W
Ambient Operating Temperature	0°C to 40°C (32°F to 104°F)
Operating Ambient Humidity	10% to 90% (no condensation)
Storage Temperature	0°C to 40°C (32°F to 104°F)
Storage Humidity	10% to 90% (no condensation)
Weight	Approx. 13.5 kg(29.7 lbs.) [excluding accessories]
Dimensions (W x H x D)	482 mm x 132 mm x 418 mm (18-31/32 inches x 5-3/16 inches x 16-15/32 inches) [excluding protrusions]

Video Terminal		
SDI IN 1 to SDI IN 32 Terminals	During Standard mode 32 lines • Connectors: BNCx32 • SDI IN 27, SDI IN 28, SDI IN 31, SDI IN 32 terminals are equipped with up-converters. • SDI IN 25 to SDI IN 32 terminals are equipped with color correctors.	
	HD-SDI	SMPTE292M (BTA S-004) standard compliant • 0.8 V [p-p]±10% (75 Ω) • Automatic equalizer more than 100 m(328 ft) (when 1.5 Gbps/5C-FB cable is used)
	SD-SDI	SMPTE259M standard compliant • 0.8 V [p-p]±10% (75 Ω) • Automatic equalizer 200 m (656 ft) (when 5C-2V cable is used)
	During 3G mode 16 lines • Connector: BNC×16 (only the odd numbered terminals can be used) • The even numbered terminals <SDI IN 2>, <SDI IN 4> ... <SDI IN 32> cannot be used. • <SDI IN 25>, <SDI IN 27>, <SDI IN 29>, and <SDI IN 31> terminals are equipped with color correctors.	
	During 4K mode 4K signal x 8 lines • Connector: BNC x 32 (3G-SDI x 4 SQD / 2SI)	
	3G-SDI	3G serial digital, SMPTE424M standard compliant • 0.8 V[p-p] ±10% (75 Ω) • Automatic equalizer 100 m (328 ft) (when 3 Gbps/5C-FB cable is used) • 3G-SDI Level B • 3G-SDI Level A (FS ON)
DVI-D IN 1 to DVI-D IN 2 Terminals	2 lines Digital RGB: XGA (1024 x 768), WXGA (1280 x 768), SXGA (1280 x 1024), WSXGA+ (1680 x 1050), UXGA (1600 x 1200), WUXGA (1920 x 1200) Vertical frequency: 60 Hz Video format inputs: 1080/59.94p, 1080/50p, 1080/59.94i, 1080/50i, 720/59.94p, 720/50p • Connectors: DVI-D x 2 • The terminals do not support HDCP. • The DVI-I connector cable cannot be used. • For the DVI-D connector cable, use a cable with a length of up to 5 m.(16.4 ft) • <DVI-D IN1>/<DVI-D IN2> terminals cannot be used during 3G/4K mode.	
SDI OUT 1 to SDI OUT 16 Terminals	During Standard mode 16 lines (2 distributed outputs per line) • Connectors: BNC x 32 • ME1PGM, ME1PVW, ME1CLN, ME1KEYPVW, ME2PGM, ME2PVW, ME2CLN, ME2KEYPVW, DSKPGM1, DSKPGM2, DSKPVW1, DSKPVW2, DSK1CLN, DSK2CLN, DSK3CLN,DSK4CLN, SEL KEYPVW, MV1 to MV4, and AUX1 to AUX16 can be assigned.	
	HD-SDI	SMPTE292M (BTA S-004) standard compliant • Output level: 0.8 V [p-p]±10%
	SD-SDI	SMPTE259M standard compliant • Output level: 0.8 V [p-p]±10%
	During 3G mode 3G-SDI output: 8 lines (2 distribute outputs per line) HD-SDI output: 2 lines (2 distribute outputs per line) • Connector 3G-SDI: BNC×16 (odd numbered terminals only) HD-SDI: BNCx4 (<SDI OUT 14> and <SDI OUT 16> terminals only) • 3G-SDI signal is not output from the even numbered terminals. – No signal is output from the <SDI OUT 2>, <SDI OUT 4> ... <SDI OUT 12> terminals. – The HD-SDI signal converted to the 1080i format is output from the <SDI OUT 14> and <SDI OUT 16> terminals. This signal is converted to the 1080i format by decimating the 1080p signal from the <SDI OUT 13> and <SDI OUT 15> terminals. • <SDI OUT 13> and <SDI OUT 15> terminals are equipped with color correctors. The same color corrector setting is also applied to <SDI OUT 14> and <SDI OUT 16> terminals. • ME1PGM, ME1PVW, ME1CLN, ME1KEYPVW, ME2PGM, ME2PVW, ME2CLN, DSKPGM1, DSKPGM2, DSKPVW1, DSKPVW2, DSK1CLN, DSK2CLN, SEL KEYPVW, MV1 to MV2, and AUX1 to AUX8 can be assigned.	
	During 4K mode 4K signal output: 3 lines (two distribute outputs per line) 2K signal output: 2 lines (two distribute outputs per line) • Connector 3G-SDI (for 4K signal): BNC x 24 (terminal number 1 to 12) 3G-SDI (for 2K signal): BNC x 4 (terminal number 13 and 15) HD-SDI (for 2K signal): BNC x 4 (terminal number 14 and 16) • The 4K signal is output in SQD format. • The HD-SDI signal converted to the 1080i format is output from the <SDI OUT 14> and <SDI OUT 16> terminals. This signal is converted to the 1080i format by decimating the 1080p signal output from the <SDI OUT 13> and <SDI OUT 15> terminals. • ME1PGM, ME1PVW, ME1CLN, ME1KEYPVW, ME2PGM, ME2PVW, ME2CLN, DSKPGM1, DSKPGM2, DSKPVW1, DSKPVW2, DSK1CLN, DSK2CLN, SEL KEYPVW, MV1 to MV2, and AUX1 to AUX8 can be assigned.	
	3G-SDI	3G serial digital, SMPTE424M standard compliant • Output level: 0.8 V [p-p] ±10% • 3G-SDI Level B Mapping
Signal Formats	SD	480/59.94i, 576/50i
	HD	1080/59.94i, 1080/50i, 720/59.94p, 720/50p, 1080/24PsF, 1080/23.98PsF, 1080/25PsF, 1080/29.97PsF
	3G	1080/59.94p, 1080/50p <Level B>
	4K	2160/59.94p, 2160/50p <SQD>
Signal Processing	Y:P_B:P_R 4:2:2 10 bit	
	R:G:B 4:4:4 8 bit	
ME Number	2 ME	

Synchronous Terminal		
REF Terminal	• Connectors: BNC • Same field frequencies as those of the system formats supported In Genlock mode: Black burst or Tri-level Sync input signals (with loop-through) • If the loop-through output is not used, provide a 75 Ω termination. • In the 1080/24PsF and 1080/23.98PsF formats, only Genlock mode supported • In the 1080/23.98PsF format, black burst signals with 10 Field ID (SMPTE318M standard compliant) or Tri-level Sync signals supported • In the 1080/24PsF format, Tri-level Sync signals supported In internal sync mode: Black burst output signal x 2	
LTC IN Terminal	This is the LTC (linear time code) input terminal. • Connectors: BNC • Impedance: 1 kΩ • Level: 1 to 2 V [p-p]	
Video Delay Time	During Standard mode	
	1 line (H)	When the frame synchronizer is set to "Off" and the up-converter is set to"Off"
	2 field (V)	When the frame synchronizer is set to "On", or the up-converter is set to "On"
	• When the signals have passed through PinP, DVE, MultiView, down-converter, or DVI-IN, a maximum delay of 1 frame is applied in each case.	
	During 3G mode	
	2 line (H)	When the frame synchronizer is set to [Off]
	2 frame (V)	When the frame synchronizer is set to [On]
	• Maximum of 2 frame delay is added to each when passed through PinP, DVE, or MultiView.	

Control Terminal	
LAN Terminal	Compatible with 100Base-TX and AUTO-MDIX (For IP control) • Connection cable: LAN cable (CAT5E), max. 100 m (328 ft), STP (Shielded Twisted Pair) cable recommended • Connector: RJ-45
PANEL Terminal	Compatible with 100Base-TX and AUTO-MDIX (For Control Panel AV-HS60C2/AV-HS60C4connection) • Connection cable (supplied with AV-HS60C2/AV-HS60C4): LAN cable (CAT5E), straight cable, STP (Shielded Twisted Pair), 10 m (32.8 ft) • Connector: RJ-45
COM1(M)/COM2(M)/COM3(M)Terminals	RS-422 Control Terminal For master connection for controlling external devices • Connector: D-sub 9-pin (female) x 3, inch screw
COM4(M/S) Terminal	RS-422 Control Terminal For master/slave connection for controlling external devices • Connector: D-sub 9-pin (female), inch screw • Switchable between master connection and slave connection via menu
GPI IN Terminal	GPI IN: 18 inputs, general-purpose, photocoupler sensing ALARM OUT: 1 output, open collector output (negative logic) • Connector: D-sub 25-pin (female), inch screw

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GPI OUT1/GPI OUT 2 terminal	GPI OUT: 48 outputs, selected from general purpose, tally Open collector output • Connector: D-sub 25-pin (female) x 2, inch screw

Accessories

AC cable -AV-HS60U2P: 2 cables -AV-HS60U2E: 4 cables
Rack-mounted rear panel support bracket
Screws for the rack-mounted rear panel support bracket: 8 screws
Operating Guide for the AV-HS6000 series (Excerpted Version)

■Control Panel [AV-HS60C2P/E]

General

Power Supply	AC100 V to 240 V, 50 Hz/60 Hz (AV-HS60C2 supports redundant power supply)
Power Consumption	40 W
Operating Ambient Temperature	0°C to 40°C (32°F to 104°F)
Operating Ambient Humidity	10% to 90% (no condensation)
Storage Temperature	0°C to 40°C (32°F to 104°F)
Storage Humidity	10% to 90% (no condensation)
Weight	Approx. 13.9 kg (30.6 lbs.) (excluding accessories)
Dimensions (W x H x D)	980 mm x 153.4 mm x 267 mm (38-19/32 inches x 6-1/32 inches x 10-1/2 inches) (excluding protrusions)

Control Terminal

Mainframe Terminal	Compatible with 100Base-TX and AUTO-MDIX (For Mainframe AV-HS60U2 connection) Connection cable (supplied with AV-HS60C2): LAN cable (CAT5E), Straight cable, STP (Shielded Twisted Pair), 10 m (32.8 ft) • Connector: RJ-45 When connected to the <LAN> terminal, no video will be displayed on the Menu Panel AV-HS60C3G.
MENU PANEL Terminal	Used only for the Menu Panel AV-HS60C3G • Connector: DVI-D • Because an independent signal format is used,cannot be displayed on a DVI-D monitor. • Cannot be used concurrently with a DVI-D monitor (computer) connected to the <DVI-D> terminal. Select with the display selector switch.
DVI-D Terminal	Used for displaying menus to the DVI monitor (computer) • Connector: DVI-D • Monitor resolution: 1366 x 768 compatible monitor • Cannot be used concurrently with the <MENU PANEL> terminal. Select with the display selector switch.
USB Terminal	For DVI monitor (computer) menu operation • Connector: USB (type A, female) • Cannot be used for the Menu Panel AV-HS60C3G.
Display Selector Switch	Switch for selecting <MENU PANEL> terminal or <DVI-D> terminal
COM1(M) Terminal	RS-422 Control Terminal For master connection for controlling external devices • Connector: D-sub 9-pin (female), inch screw
COM2(RS-232) Terminal	RS-232 Control Terminal For master/slave connection for controlling external devices • Connector: D-sub 9-pin (male), inch screw
GPI I/O Terminal	GPI IN: 8 inputs, general-purpose, photocoupler sensing ALARM OUT: 1 output, open collector output (negative logic) GPI OUT: 10 outputs, selected from general purpose, tally Open collector output • Connector: D-sub 25-pin (female), inch screw
ME Number	2 ME

Accessories

AC Cable -AV-HS60C2P: 2 cables -AV-HS60C2E: 4 cables
LAN Cable: 1 cable (used to connect with the Mainframe AV-HS60U2)
Switch blank cap (large): 24 caps Switch blank cap (small): 12 caps

■Control Panel AV-HS60C4P/E

Power Supply	AC100 V to 240 V, 50 Hz/60 Hz (Supports redundant power supply)
Power Consumption	40 W
Operating Ambient Temperature	0°C to 40°C (32°F to 104°F)
Operating Ambient Humidity	10% to 90% (no condensation)
Storage Temperature	0°C to 40°C (32°F to 104°F)
Storage Humidity	10% to 90% (no condensation)
Weight	Approx. 15.0 kg (33.0 lbs.) (excluding accessories)
Dimensions (W x H x D)	656 mm×160 mm×400 mm (25-53/64 inches×6-19/64 inches×15-3/4 inches) (excluding protrusions)

Control Terminal

Mainframe Terminal	Compatible with 100Base-TX and AUTO-MDIX (For Mainframe AV-HS60U2 connection) Connection cable (supplied with AV-HS60C4): LAN cable (CAT5E), Straight cable, STP (Shielded Twisted Pair), 10 m (32.8 ft) • Connector: RJ-45 When connected to the <LAN> terminal, no video will be displayed on the Menu Panel AV-HS60C3G.
MENU PANEL Terminal	Used only for the Menu Panel AV-HS60C3G • Connector: DVI-D • Because an independent signal format is used, cannot be displayed on a DVI-D monitor. • Cannot be used concurrently with a DVI-D monitor connected to the <DVI-D> terminal. Select with the display selector switch.
DVI-D Terminal	Used for displaying menus to the DVI monitor • Connector: DVI-D • Monitor resolution: 1366×768 compatible monitor • Cannot be used concurrently with the <MENU PANEL> terminal. Select with the display selector switch.
USB Terminal	For DVI monitor menu operation • Connector: USB (type A, female) • Cannot be used for the Menu Panel AV-HS60C3G.
Display Selector Switch	Switch for selecting <MENU PANEL> terminal or <DVI-D> terminal
COM1(M) Terminal	RS-422 Control Terminal For master connection for controlling external devices • Connector: D-sub 9-pin (female), inch screw
COM2(RS-232) Terminal	RS-232 Control Terminal For external device control connections • Connector: D-sub 9-pin (male), inch screw
GPI I/O Terminal	GPI IN: 8 inputs, general-purpose, photocoupler sensing ALARM OUT: 1 output, open collector output (negative logic) GPI OUT: 10 outputs, selected from general purpose, tally Open collector output • Connector: D-sub 25-pin (female), inch screw
ME Number	2 ME

Accessories

AC Cable: 2 cables LAN Cable: 1 cable (used to connect with the Mainframe AV-HS60U2)
Switch blank cap (large): 16 caps Switch blank cap (small): 8 caps

■Menu Panel [AV-HS60C3G]

General

Power Supply	DC12 V/0.54 A (Supplied from AV-HS60C2/AV-HS60C4 using the supplied cable)
Power Consumption	6.48 W
Operating Ambient Temperature	0°C to 40°C (32°F to 104°F)
Operating Ambient Humidity	10% to 90% (no condensation)
Storage Temperature	0°C to 40°C (32°F to 104°F)
Storage Humidity	10% to 90% (no condensation)
Weight	Approx. 1.7 kg (3.7 lbs.) (excluding accessories)
Dimensions (W x H x D)	290 mm x 177 mm x 46.1 mm (11-13/32 inches x 6-31/32 inches x 1-13/16 inches) (excluding protrusions) 4RU

Control Terminal

Control Panel Terminal	Used only for the Control Panel AV-HS60C2/AV-HS60C4 • Connectors: DVI-D • Because an independent signal format is used,DVI-D source cannot be displayed. • Cannot be used concurrently with a DVI-D monitor connected to the <DVI-D> terminal of the Control Panel AV-HS60C2/AV-HS60C4. Set the display selector switch of the Control Panel AV-HS60C2/AV-HS60C4 to the <MENU PANEL> terminal side.

Accessories

Connecting cable (with ferrite core) for the Control Panel AV-HS60C2/AV-HS60C4: 1cable
Bracket for mounting the Control Panel AV-HS60C2/AV-HS60C4
Screws for the bracket for mounting the Control Panel AV-HS60C2/AV-HS60C4: 6 screws

■Storage Module [AV-HS60D1G]

General

Weight	Approx. 7.0 g (0.3 ozs.)
Dimensions (W x H x D)	29.85 mm x 4.0 mm x 50.8 mm (1-3/16 inches x 5/32 inches x 2 inches)

Accessories

AV-HS60D1 Installation Guide

Due to device characteristics, the storage module AV-HS60D1G is subject to data damage and overwriting restrictions.
Backup of important data is recommended.

*For information on "AV-HS6000 Block Diagrams", see page 75.

AV-HS450

■Mainframe [AV-HS450U1N/E]

General	
Power Supply	AC 100 V to 120 V, 50/60 Hz • Redundant power supply standard supported
Power Consumption	120 W
Ambient Operating Temperature	0 °C to 40 °C (32 °F to 104 °F)
Humidity	10 % to 90 % (no condensation)
Dimensions (W x H x D)	2RU size 482 x 88 x 471 mm (19˝ x 3-7/16˝ x 18-9/16˝) [excluding protrusions]
Weight	9.8 kg (21.605 lbs.) [excluding accessory parts when no options have been installed] 10.3 kg (22.707 lbs.) [excluding accessory parts when all the possible options have been installed]

Video Terminal		
Video Inputs (20 signal lines, maximum)		Standard SDI: 16 signal lines BNC x 16 (IN1 to IN16)
		Optional: Up to 4 additional signal lines (IN A1, IN A2, IN B1, IN B2) (Up to two option boards can be installed in the two input/output slots.)
Video Outputs (10 signal lines, maximum)		Standard SDI: 4 signal lines BNC x 5 (OUT1 to OUT4 x 1 line each, 2 distributed outputs for OUT1 only)
		Standard DVI-D: 2 signal lines DVI-D x 2 (OUT5, OUT6)
		Optional: Up to 4 additional lines (OUT A1, OUT A2, OUT B1, OUT B2) (Up to two option boards can be installed in the two input/output slots.)
		• PGM, PVW, AUX1 to AUX4, MV1 (MULTI_PVW1), MV2 (MULTI_PVW2), CLN and KEYOUT can be allocated to each output. • CLN can be pre-selected from KEY, DSK1 or DSK2 using a menu.
Signal Formats	SD	480/59.94i, 576/50i
	HD	1080/59.94i, 1080/50i, 720/59.94p, 720/50p, 1080/24PsF*, 1080/23.98PsF* *The following option boards are not supported: AV-HS04M1, AV-HS04M2, AV-HS04M3, AV-HS04M4, AV-HS04M5, AV-HS04M6, AV-HS04M7, AV-HS04M7D
Signal Processing		Y:C_B:C_R 4: 2: 2, 10 bit (8 bits for frame memory) RGB 4:4:4, 8 bit
ME Number		1ME
SDI Inputs		HD: Serial digital component (SMPTE 292M) SD: Serial digital component (SMPTE 259M)
		16 signal lines, standard: IN1 to IN16 20 signal lines, maximum: IN A1, IN A2, IN B1, IN B2 (When two AV-HS04M1 boards are used; with active through)
		HD [SMPTE 292M (BTA S-004B) standard complied with] • 0.8 V [p-p] ±10 % (75 Ω) • Input return loss More than 15 dB (5 MHz to 750 MHz) More than 10 dB (750 MHz to 1.5 GHz) • Automatic equalizer 100 m (328 ft.) (when 5C-FB cable is used)
		SD [SMPTE 259M standard complied with] • 0.8 V [p-p] ±10 % (75 Ω) • Input return loss More than 15 dB (5 MHz to 270 MHz) • Automatic equalizer 200 m (656 ft.) (when 5C-2V cable is used)
SDI Outputs		HD: Serial digital component (SMPTE 292M) SD: Serial digital component (SMPTE 259M)
		4 signal lines, standard: OUT1 x 2; OUT2, OUT3, OUT4 x 1 each 8 signal lines, maximum: OUT A1, OUT A2, OUT B1, OUT B2 (When two AV-HS04M7 boards are used)
		HD [SMPTE 292M (BTA S-004B) standard complied with] • Output return loss More than 15 dB (5 MHz to 750 MHz) More than 10 dB (750 MHz to 1.5 GHz) • Output level 0.8 V [p-p] ±10 % (75 Ω) • Rise time Less than 270 ps • Fall time Less than 270 ps • Difference between rise time and fall time Less than 100 ps • Alignment jitter Less than 0.2 UI (130 ps) • Timing jitter Less than 1.0 UI • Eye aperture ratio More than 90 % • DC offset 0±0.5 V
SDI Outputs		SD [SMPTE 259M standard complied with] • Output return loss More than 15 dB (5 MHz to 270 MHz) • Output level 0.8 V [p-p]±10 % (75 Ω) • Rise time Less than 1.5 ns • Fall time Less than 1.5 ns • Difference between rise time and fall time Less than 0.5 ns • Jitter Less than 0.2 UI
Composite Input (Option)		Analog composite signal (NTSC/PAL) (1.0 V [p-p], 75 Ω)
		4 signal lines, maximum: IN A1, IN A2, IN B1, IN B2 (When two AV-HS04M6 boards are used; with loop-through)
Analog Input (Option)		SD/HD analog component Y/P_B/P_R (1.0 V [p-p], 75 Ω)
		4 signal lines, maximum: IN A1, IN A2, IN B1, IN B2 (When two AV-HS04M2 boards are used)
Analog Output (Option)		SD/HD analog component Y/P_B/P_R (1.0 V [p-p], 75 Ω)
		4 signal lines, maximum: OUT A1, OUT A2, OUT B1, OUT B2 (When two AV-HS04M4 boards are used) • 2 signal lines (OUT A1, OUT B1) when two AV-HS04M5 boards are used
DVI-I Input (Option)		Analog/digital RGB: XGA (1024 x 768), WXGA (1280 x 768), SXGA (1280 x 1024) Vertical frequency: 60 Hz
		4 signal lines, maximum: IN A1, IN A2, IN B1, IN B2 (When two AV-HS04M3 boards are used)
DVI-I Output (Option)		Analog/digital RGB: XGA (1024 x 768), WXGA (1280 x 768), SXGA (1280 x 1024), WSXGA+*(1680 x 1050), UXGA* (1600 x 1200), WUXGA* (1920 x 1200) *Selectable only when digital signals are output Vertical frequency: 60 Hz
		2 signal lines, maximum: OUT A2, OUT B2 (When two AV-HS04M5 boards are used)
DVI-D Input (Option)		Digital RGB: XGA (1024 x 768), WXGA (1280 x 768), SXGA (1280 x 1024), WSXGA+ (1680 x 1050),UXGA (1600 x 1200), WUXGA (1920 x 1200) Vertical frequency: 60 Hz Digital RGB: 1080/50P, 1080/59.94P • This board is incompatible with the HDCP (High-bandwidth Digital Content Protection). • Analog input signals are not supported.
		4 signal lines, maximum: IN A1, IN A2, IN B1, IN B2 (When two AV-HS04M8 boards are used) • The DVI-I connector cable cannot be used. • For the DVI-D connector cable, use a cable with a length of up to 5 m (16.4 ft.).
DVI-D Output		Digital RGB: XGA (1024 x 768), WXGA (1280 x 768), SXGA (1280 x 1024), WSXGA+ (1680 x 1050), UXGA (1600 x 1200), WUXGA (1920 x 1200) Vertical frequency: 60 Hz Digital RGB: 1080/50P, 1080/59.94P (The vertical frequency is the same as that of the system format. When the system format is 1080/23.98PsF or 24PsF, the images cannot be output.) • Analog output signals are not supported. • High-resolution multi view mode supported: Signals are also output with a high resolution even when SD has been selected as the system mode. With this mode setting, MV1 is output to OUT5 and MV2 to OUT6; MV1 and MV2 cannot be output to any other outputs.
		2 lines, standard: OUT5, OUT6 • The DVI-I connector cable cannot be used. • For the DVI-D connector cable, use a cable with a length of up to 5 m (16.4 ft.).

Synchronous Terminal	
Reference Input/Output	In gen-lock mode: Black burst or Tri-level Sync input signals (with loop-through) In internal sync mode: Black burst output signals x 2 • Same field frequencies as those of the system formats supported • With the 1080/23.98PsF and 24PsF formats, only GENLOCK mode supported • With the 1080/23.98PsF format, black burst with 10F-ID (SMPTE318M standard met) or TRI signals supported
Video Delay Time	FS OFF, U/C OFF 1 line (H)
	FS ON or U/C ON 1 frame (F)
	• When the signals have passed through DVE, multi view, down-converter, DVI-IN or DVI-OUT, a maximum delay of 1 frame is applied in each case.

Control Terminal	
PANEL	RJ45 x 1 100 Mbps • When the control panel is connected
LAN	RJ45 x 1 100/10 Mbps • Used for maintenance purposes
EDITOR	D-sub, 9-pin, female RS-422 control connector • GVG standard protocol subset supported
COM	D-sub, 9-pin, female RS-422 control connector • For Panasonic pan-tilt head system control, etc.
TALLY/GPI	D-sub, 50-pin, female INPUT: 8 inputs, general-purpose, photocoupler sensing OUTPUT: 31 outputs; selected from R/G tally, general-purpose ALARM: 1 output, open collector output (negative logic)

■Control panel [AV-HS450C1N/E]

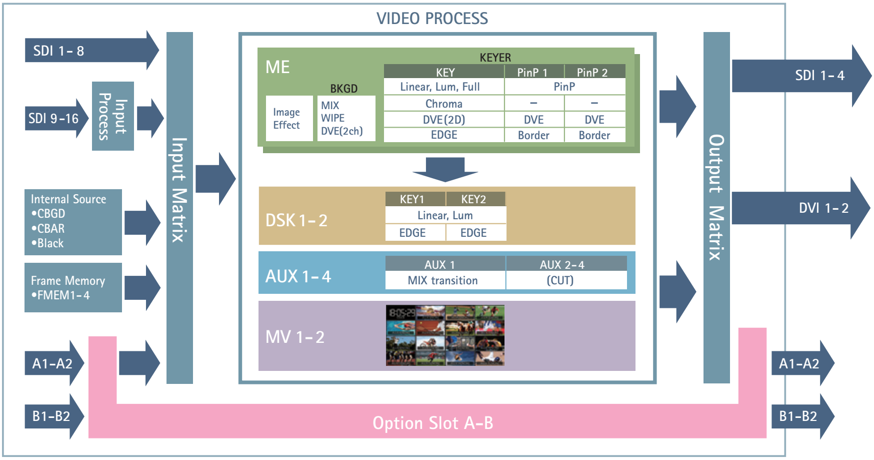
General	
Power Supply	DC 12 V, 0.8 A • Redundant operation enabled by connecting two AC adaptors • Power consumption when using the AC adaptor: AC 14 W
	Supplied AC adaptor Input: AC 100 V to 240 V, 1.3 A, 47-63 Hz Output: DC 12 V, 3.5 A, 42 W Supplied power cable Maximum rating: AC 125 V • Use within AC 100 V to 120 V.
Ambient Operating Temperature	0 °C to 40 °C (32 °F to 104 °F)
Humidity	10 % to 90 % (no condensation)
Dimensions (W x H x D)	560 x 88 x 299 mm (22-1/16″ x 3-7/16″ x 11-3/4″) [excluding protrusions]
Weight	3.9 kg (8.598 lbs.) [excluding accessory parts]

Control Terminal	
MAINFRAME	RJ45 x 1 100 Mbps • For connecting the mainframe
TALLY/GPI	D-sub, 25-pin, female INPUT: 8 inputs OUTPUT: 8 outputs ALARM: 1 output

Other	
SD Memory Cards	Memory size supported: Max. 32 GB (SDHC memory cards supported) Still image files: Load, save Setup data: Backup

Accessories
Operating instructions, CD-ROM (Operating instructions/Image transmission software), AC adaptors (for control panel), Power cords (for mainframe and AC adaptor), CAT5E cable (STP, straight cable, 10 m (32.8 ft.) long)

AV-HS450 Block Diagram



AV-HS410 [AV-HS410N/E]

General		
Power Supply		AC 100 V to 240 V, 50/60 Hz
Power Consumption		88 W
Ambient Operating Temperature		0 °C to 40 °C (32 °F to 104 °F)
Humidity		10 % to 90 % (no condensation)
Dimensions (W x H x D)		440 mm x 158 mm x 361 mm (17-5/16 inches x 6-7/32 inches x 14-7/32 inches) [excluding protrusions]
Mass		Approx. 6.2 kg (13.669 lb) [excluding accessory parts when no options have been installed] Approx. 6.6 kg (14.550 lb) [excluding accessory parts when all the possible options have been installed]
Video Terminal		
Video Inputs (13 signal lines, maximum)		Standard SDI: 8 signal lines BNC x 8 (SDI INPUT 1 to SDI INPUT 8) • The up-converter function can be used for the SDI INPUT 5 to SDI INPUT 8 connectors.
		Standard DVI-D: 1 signal line DVI-D x 1
		Optional: Up to 4 additional signal lines (IN A1, IN A2, IN B1, IN B2) (Up to two option boards can be installed in the two input/output slots.)
Video Outputs (10 signal lines, maximum)		Standard SDI: 5 signal lines BNC x 6 (SDI OUTPUT 1 to SDI OUTPUT 5 x 1 line each, 2 distributed outputs for SDI OUTPUT 1 only)
		Standard DVI-D: 1 signal line DVI-D x 1
		Optional: Up to 4 additional lines (OUT A1, OUT A2, OUT B1, OUT B2) (Up to two option boards can be installed in the two input/output slots.)
		• PGM, PVW, AUX1 to AUX4, MV (MULTI_VIEW), CLN, KEYOUT and MEM PVW can be assigned to SDI OUTPUT 1 to SDI OUTPUT 5, DVI-D OUT, OUT A1, OUT A2, OUT B1 and OUT B2. • CLN can be pre-selected from KEY or DSK using a menu.
Signal Formats	SD	480/59.94i, 576/50i
	HD	1080/59.94i, 1080/50i, 720/59.94p, 720/50p, 1080/24PsF*, 1080/23.98PsF* *The following option boards are not supported: AV-HS04M1, AV-HS04M2, AV-HS04M3, AV-HS04M4, AV-HS04M5,AV-HS04M6, AV-HS04M7
Signal Processing		Y:P_B:P_R 4: 2: 2, 10 bit (8 bits for video memory) RGB 4:4:4, 8 bit
ME Number		1ME
SDI Inputs		HD-SDI: HD Serial digital (SMPTE 292M) SD-SDI: SD Serial digital (SMPTE 259M)
		8 signal lines, standard: IN1 to IN8 12 signal lines, maximum: IN A1, IN A2, IN B1, IN B2 (When two AV-HS04M1 boards are used; with active through)
		HD: SMPTE 292M (BTA S-004B) standard complied with • 0.8 V [p-p] ±10 % (75 Ω) • Automatic equalizer More than 100 m (328 ft) (when 1.5 Gbps/5C-FB cable is used)
		SD: SMPTE 259M standard complied with • 0.8 V [p-p] ±10 % (75 Ω) • Automatic equalizer 200 m (656 ft) (when 5C-2V cable is used)
SDI Outputs		HD-SDI: HD Serial digital (SMPTE 292M) SD-SDI: SD Serial digital (SMPTE 259M)
		5 signal lines, standard: OUT1 x 2; OUT2 to OUT5 x 1 each 9 signal lines, maximum: OUT A1, OUT A2, OUT B1, OUT B2 (When two AV-HS04M7 boards are used)
SDI Outputs		HD: SMPTE 292M (BTA S-004B) standard complied with • Output level 0.8 V [p-p]±10 % • Rise time HD: Less than 270 ps • Fall time HD: Less than 270 ps • Difference between rise time and fall time HD: Less than 100 ps • Alignment jitter HD: Less than 0.2 UI (130 ps) • Timing jitter HD: Less than 1.0 UI • Eye aperture ratio More than 90 % • DC offset 0 ±0.5 V
		SD: SMPTE 259M standard complied with • Output level 0.8 V [p-p] ±10 % • Rise time Less than 1.5 ns • Fall time Less than 1.5 ns • Difference between rise time and fall time Less than 0.5 ns • Jitter Less than 0.2 UI
Composite Input (Option board)		Analog composite signal (NTSC/PAL) (1.0 V [p-p], 75 Ω)
		4 signal lines, maximum: IN A1, IN A2, IN B1, IN B2 (When two AV-HS04M6 boards are used; with loop-through)
Analog Input (Option board)		SD/HD analog component Y/P_B/P_R (1.0 V [p-p], 75 Ω)
		4 signal lines, maximum: IN A1, IN A2, IN B1, IN B2 (When two AV-HS04M2 boards are used)
Analog Output (Option board)		SD/HD analog component Y/P_B/P_R (1.0 V [p-p], 75 Ω)
		4 signal lines, maximum: OUT A1, OUT A2, OUT B1, OUT B2 (When two AV-HS04M4 boards are used) • 2 signal lines (OUT A1, OUT B1) when two AV-HS04M5 boards are used.
DVI-I Input (Option board)		Analog/digital RGB: XGA (1024 x 768), WXGA (1280 x 768), SXGA (1280 x 1024) Vertical frequency: 60 Hz • This connector does not support the HDCP technologies.
		4 signal lines, maximum: IN A1, IN A2, IN B1, IN B2 (When two AV-HS04M3 boards are used)
DVI-I Output (Option board)		Analog/digital RGB: XGA (1024 x 768), WXGA (1280 x 768), SXGA (1280 x 1024), WSXGA+* (1680 x 1050), UXGA* (1600 x 1200), WUXGA* (1920 x 1200) *Selectable only when digital signals are output. Vertical frequency: 60 Hz • This connector does not support the HDCP technologies.
		2 signal lines, maximum: OUT A2, OUT B2 (When two AV-HS04M5 boards are used)
DVI-D Input (Option board)		Digital RGB: XGA (1024 x 768), WXGA (1280 x 768), SXGA (1280 x 1024), WSXGA+ (1680 x 1050), UXGA (1600 x 1200), WUXGA (1920 x 1200) Vertical frequency: 60 Hz Digital RGB: 1080/50p, 1080/59.94p • Analog input signals are not supported. • This connector does not support the HDCP technologies.
		4 signal lines, maximum: IN A1, IN A2, IN B1, IN B2 (When two AV-HS04M8 boards are used) • The DVI-I connector cable cannot be used. • For the DVI-D connector cable, use a cable with a length of up to 5 m (16.4 ft).
DVI-D Input/Output		Digital RGB: XGA (1024 x 768), WXGA (1280 x 768), SXGA (1280 x 1024), WSXGA+ (1680 x 1050), UXGA (1600 x 1200), WUXGA (1920 x 1200) Vertical frequency: 60 Hz Video format inputs: Digital RGB: 1080/50p, 1080/59.94p Vertical frequency: Same as system formats Video format outputs: Digital RGB: 1080/50p, 1080/59.94p, 1080/50i, 1080/59.94i, 720/50p, 720/59.94p • The input and output of analog signals are not supported. • Output support the high-resolution multi view mode: Signals are output with a high resolution even when SD is set as the system mode. (When high-resolution multi view mode has been enabled, MV is selected as the DVI-D OUT output, and it is not possible to select MV with SDI OUT.) • This connector does not support the HDCP technologies.
		Standard input/output: 1 line each (DVI-D IN, DVI-D OUT) • The DVI-I connector cable cannot be used. • For the DVI-D connector cable, use a cable with a length of up to 5 m (16.4 ft).

As of April, 2018

Synchronous Terminal	
Reference Input/ Output	In gen-lock mode: Black burst or Tri-level Sync input signals (with loop-through) In internal sync mode: Black burst output signals x 2 • Same field frequencies as those of the system formats supported. • With the 1080/24PsF format, only gen-lock mode supported. • With the 1080/23.98PsF format, black burst with 10F-ID (SMPTE318M standard met) or TRI signals supported.
Video Delay Time	1 line (H) When the frame synchronizer setting is “Off” and the up-converter setting is “Off”.
	1 frame (F) When the frame synchronizer setting is “On” or the up-converter setting is “On”.
	• When the signals have passed through PinP, DVE, multi view, down-converter, DVI-IN or DVI-OUT, a maximum delay of 1 frame is applied in each case.

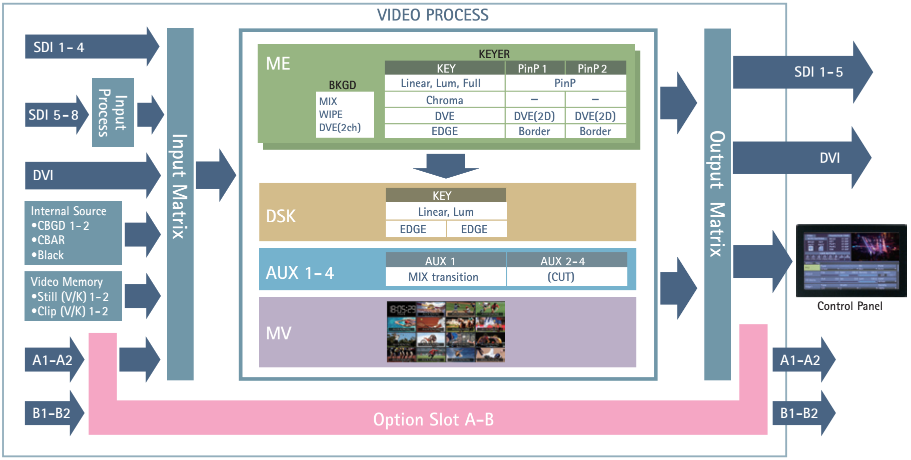
Control Terminal	
LAN	RJ-45 x 1 10BASE-T/100BASE-TX (For IP control) Connecting cable: LAN cable (category 5 or above), max. 100 m (328 ft), STP (Shielded Twisted Pair) cable recommended • When connecting to a hub (switching hub), use a straight cable. Use a crossover cable when connecting the unit and computer on a 1:1 basis without going through a hub. • Use with the same segment is recommended for the equipment which is connected to the unit. If the unit is connected to equipment whose segments are different, events dependent upon the settings inherent to the network equipment, for instance, may occur so thoroughly check the connections with the equipment to which the unit will be connected prior to the start of operation.

EDITOR	D-sub, 9-pin, female Used to control an editor RS-422 control connector Communication format Baud rate: 38400 bps Character length: 8 bit Parity: Odd Stop bit: 1 bit Flow control: None
COM	D-sub, 9-pin, female Used to control an external device RS-422 control connector Communication format (selected using a menu) • Mode: 1 (default setting) Baud rate: 9600 bps Character length: 8 bit Parity: None Stop bit: 1 bit Flow control: None • Mode: 2 Baud rate: 38400 bps Character length: 8 bit Parity: Odd Stop bit: 1 bit Flow control: None • Mode: 3 Baud rate: 38400 bps Character length: 8 bit Parity: None Stop bit: 1 bit Flow control: None
TALLY/GPI 1 TALLY/GPI 2	D-sub, 15-pin, female (x 2) Input: 8 inputs, general-purpose, photocoupler sensing Output: 19 outputs; selected from R/G tally, general-purpose Alarm: 1 output, open collector output (negative logic)

Other
BOOT switch [SV/NM (service/normal)] (for maintenance purposes) Normally, this switch is used as the “NM” position.

Accessories
CD-ROM (Operating Instructions <Basics>, Operating Instructions <Operations and Settings>, User Guide “AV-HS410 Image Transmission Software”, DVI input level adjustment file (BW.bmp), Image Transmission Software (ImageTrans.exe)), Power cable (2 m [6.6 ft])

AV-HS410 Block Diagram



AW-HS50 [AW-HS50N/E]

General	
Power Requirements	DC 12 V ±10 % (AC adaptor provided)
Current Consumption	2.0 A (DC 12 V)
Ambient Operating Temperature	0 °C to 40 °C (32 °F to 104 °F)
Humidity	10 % to 90 % (no condensation)
Dimensions (W x H x D)	210 x 67 x 177 mm (8-1/4″ x 2-5/8″ x 6-15/16″) [excluding protrusions]
Mass	1.4 kg (3.08 lbs.)

Video Terminal		
Inputs		5 video lines SDI 4 signal lines: SDI IN 1 to SDI IN 4 DVI-D 1 signal line: DVI IN
Outputs		3 video lines, 4 outputs SDI 2 signal lines: SDI OUT 1, SDI OUT 2 (Only the SDI OUT 1 signals are split into two) DVI-D 1 signal line: DVI OUT
Signal Formats	SD	480/59.94i, 576/50i
	HD	1080/59.94i, 1080/50i, 720/59.94p, 720/50p, 1080/24PsF, 1080/23.98PsF
Signal Processing		$Y:C_B:C_R$ 4:2:2, 10 bit (8 bits for frame memory) RGB 4:4:4, 8 bit
ME Number		1ME
SDI Inputs		HD: Serial digital component (SMPTE 292M) SD: Serial digital component (SMPTE 259M)
		4 signal lines: SDI IN 1 to SDI IN 4
		HD: SMPTE 292M (BTA S-004B) standard complied with • 0.8 V [p-p] ±10 % (75 Ω) • Input return loss More than 15 dB (5 MHz to 1.5 GHz) • Automatic equalizer 100 m (328 ft.) (when 5C-FB cable is used)
		SD: SMPTE 259M standard complied with • 0.8 V [p-p] ±10 % (75 Ω) • Input return loss More than 15 dB (5 MHz to 270 MHz) • Automatic equalizer 200 m (656 ft.) (when 5C-2V cable is used)
DVI-D Input		Digital RGB (Vertical frequency: 60 Hz): XGA (1024 x 768), WXGA (1280 x 768), SXGA (1280 x 1024), WSXGA+ (1680 x 1050), UXGA (1600 x 1200), WUXGA (1920 x 1200) Digital RGB: 1080/50p, 1080/59.94p • Analog input signals are not supported.
SDI Outputs		HD: Serial digital component (SMPTE 292M) SD: Serial digital component (SMPTE 259M)
		2 signal lines: SDI OUT 1, SDI OUT 2 (Only the SDI OUT 1 signals are split into two)
		HD: SMPTE 292M (BTA S-004B) standard complied with • Output return loss More than 15 dB (5 MHz to 1.5 GHz) • Output level 0.8 V [p-p] ±10 % (75 Ω) • Rise time Less than 270 ps • Fall time Less than 270 ps • Difference between rise time and fall time Less than 100 ps • Alignment jitter Less than 0.2 UI (130 ps) • Timing jitter Less than 1.0 UI • Eye aperture ratio More than 90 % • DC offset 0±0.5 V
		SD: SMPTE 259M standard complied with • Output return loss More than 15 dB (5 MHz to 270 MHz) • Output level 0.8 V [p-p] ±10 % (75 Ω) • Rise time Less than 1.5 ns • Fall time Less than 1.5 ns • Difference between rise time and fall time Less than 0.5 ns • Jitter Less than 0.2 UI
DVI-D Output		Digital RGB (Vertical frequency: 60 Hz): XGA (1024 x 768), WXGA (1280 x 768), SXGA (1280 x 1024), WSXGA+ (1680 x 1050), UXGA (1600 x 1200), WUXGA (1920 x 1200) Digital RGB: 1080/50p, 1080/59.94p • High-resolution multi view mode supported: Signals are also output with a high resolution even when SD has been selected as the system mode. When the high-resolution multi view mode is enabled, MV is assigned to the DVI OUT connector, and MV cannot be assigned to the SDI OUT 1 connectors or SDI OUT 2 connector. • Analog output signals are not supported.

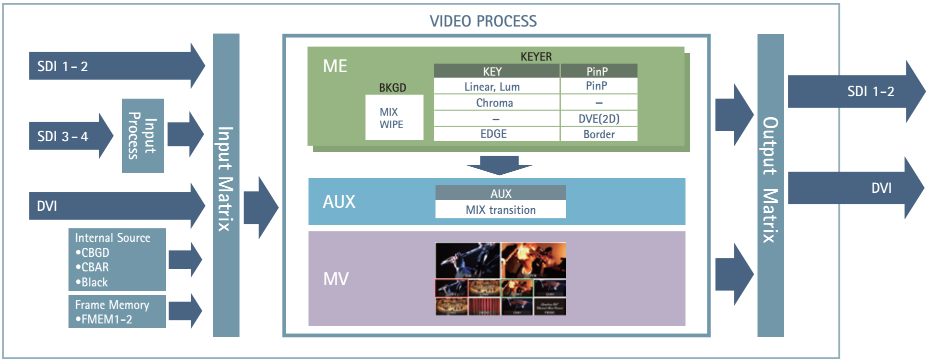
Synchronous Terminal	
Video Delay Time	1 frame (F) • Video signals that have passed through the PinP, multi view display, DVI-D input or DVI-D output will be delayed in each case by up to one frame.

Control Terminal	
LAN	RJ-45 x 1 10BASE-T/100BASE-TX (For IP control) Connecting cable: LAN cable (category 5 or above), max. 100 m [328 ft.], STP (Shielded Twisted Pair) cable recommended • When connecting to a hub (switching hub), use a straight cable. Use a crossover cable when connecting the unit and another device on a 1:1 basis without going through a hub.
TALLY/GPI	D-sub 15-pin, female, inch thread INPUT: 5 inputs, photocoupler sensing OUTPUT: 7 outputs, open collector output (negative logic)

Other	
Other	SERVICE switch [SV/NM] (for maintenance purposes) Normally, this switch is used as the “NM” position.

Accessories
Operating Instructions <Basics> (this manual), CD-ROM (Operating Instructions <Basics>, Operating Instructions <Operations and Settings>, Data Transmission Software), AC adaptor, Power cable (2 m [6.6 ft.])

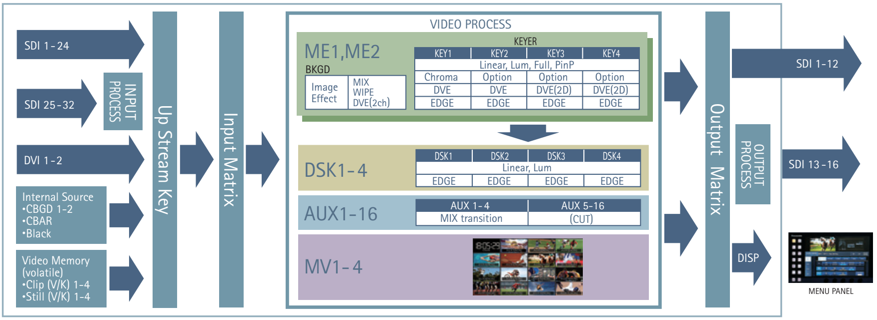
AW-HS50 Block Diagram



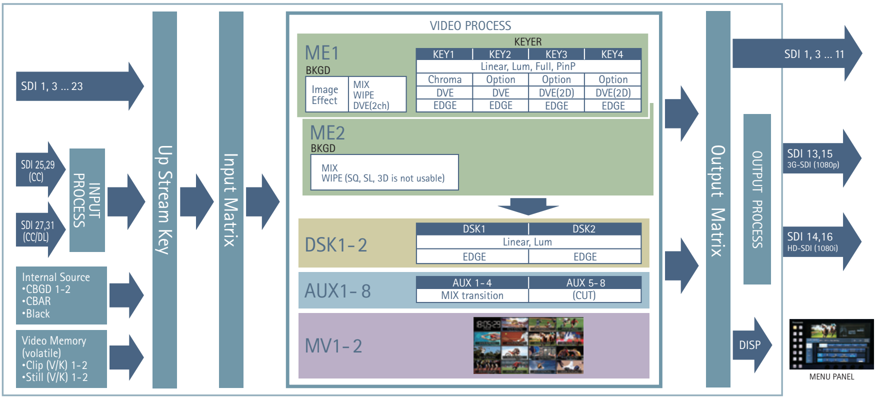
As of April, 2018

AV-HS6000 Block Diagrams

AV-HS6000 Block Diagram (Standard mode)

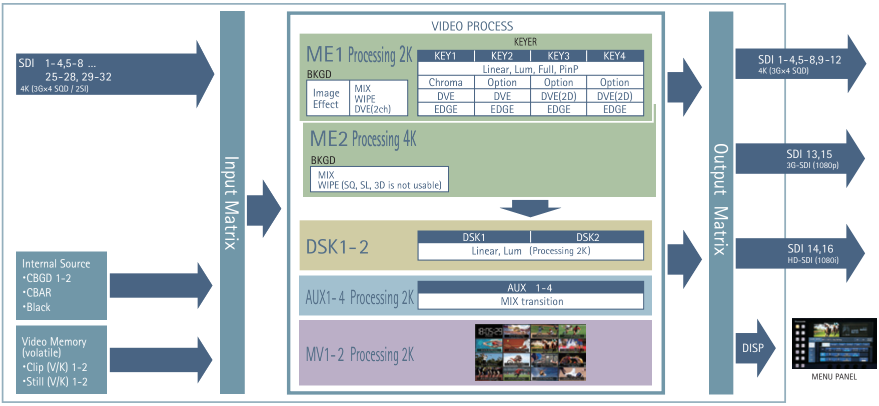


AV-HS6000 Block Diagram (3G mode)



*Input and output is by odd-numbered terminals only. *1080i format signals where half of the lines are thinned out from OUT13 and OUT15 (1080p) format signals are output from OUT14 and OUT16 terminals.

AV-HS6000 Block Diagram (4K mode)



*1080i format signals where half of the lines are thinned out from OUT13 and OUT15 (1080p) format signals are output from OUT14 and OUT16 terminals.

AV-HLC100

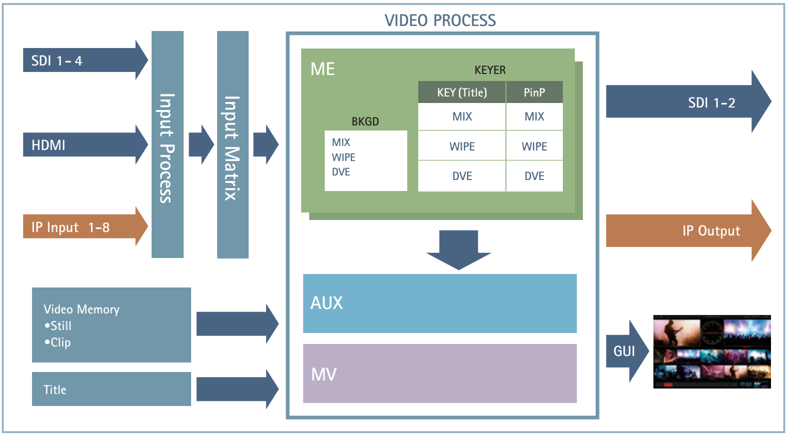
Power Supply	DC 19 V (AC adaptor provided)
Power Consumption	110 W
Ambient Operating Temperature	0 °C to 40 °C (32°F to 104°F)
Humidity	20 % to 80 % (no condensation)
Mass	Approx. 6.05 kg (13.34 lbs)
Dimensions (W x H x D)	427 mm x 93 mm x 278 mm (16.8 inches x 3.67 inches x 10.96 inches) (excluding protrusions)
Number of ME	1ME
Number of switcher channel	10 • 8 External (selected from among 3G-SDI x 4, 3G-SDI x 3 + HDMI x 1, NDI sources x 8) • 2 Internal (CLIP x 1, STILL x 1)
Number of Keyer	2 Keyer (PinP / Title)
System Video Format	1080/59.94p*1 *2, 1080/59.94i, 1080/29.97PsF, 1080/23.98p, 1080/50p*1 *2, 1080/50i, 1080/25PsF 720/59.94p, 720/50p, 720/29.97p, 720/25p
Video Input	SDI x 4 or SDI x 3 + HDMI x 1*1 *3
Network Input Sources	8 • NDI input from Panasonic PTZ Camera that supports NDI|HX and NDI compatible equipment • IP input from Skype TX compatible PC
Audio Input	15 • 4-channel SDI/HDMI embedded audio x 4 • 4-channel NDI embedded audio x 8 • 6.35 mm balanced line x 2 • 3.5 mm diameter, stereo mini jack x 1
Video Output	4 • BNC x 1 3G-SDI (PGM)*1 • BNC x 1 3G-SDI (selectable from PGM / PVW / AUX)*1 • HDMI x 1 or Display Port (for GUI)*4 x 1 • Network output x 1
Network Video Output	1 selectable from MIX (PGM or PVW) / AUX • NDI output • RTMP format streaming output*5
Audio Output	6 • SDI embedded audio x 2 • 6.35 mm balanced line x 2 • 3.5 mm diameter, stereo mini jack x 1 • NDI embedded audio x 1
Effects and Transitions	Wipe / Mix / Cut • Background Video • PinP • Title
Audio Mixing	• 4 ch. Master (Program) mix • 12 x faders: 1 for each of 8 external audio inputs, plus 1 x internal Clips player and 1 x Skype TX Talkback input; plus 1 x Master output and 1 x Headphones • Plus 1 x separate audio fader for video Streaming output • Seven-band equalizer and stereo compressor / limiter per input and output, with per-input audio delay control

Video Clip Memory	DDR x 1 ch Supported Format 1) When plug-in provided by NewTek is not installed Video format: avi, mpg, gif Audio format: wav, wma, au, midi 2) When plug-in provided by NewTek is installed Video format: 3g2, 3gp, asf, avi, dif, dv, f4v, flv, h261, h263, h264, m2p, m2t, m2ts, m4a, m4v, mjpeg, mjpg, mkv, mov, mp4, mpeg, mpg, mts, mxf, ts, webm, wmv Audio format: aif, aiff, mp3, wav, wma
Still Store Memory	DDR x 1 ch Supported Format 1) When plug-in provided by NewTek is not installed: jpeg, bmp 2) When plug-in provided by NewTek is installed: 3fr,arw,bay,bmp,bmq,cap,cine,cr2,crw,cs1, cut,dc2,dcr,dds,dng,drf,dsc,erf,exr,fff, g3, gif,hdr,ia,ico,iff,iiq,j2c,j2k, jif,jp2,jpe,jpeg, jpg,k25,kc2,kdc,koa,lbm,mdc,mef,mng, mos,mrw,nef,nrw,orf, pbm,pcd,pct,pcx, pef,pfm,pgm,pic,pict,png,ppm,psd,psdz, ptx,pxn,qtk,raf, ras,raw,rdc,rw2,rwz,sgi,sr2, srf,sti,targa,tga,tif,tiff,wap,wbm,wbmp,xbm
Title Buffer	1 Title Buffer (displays 1 of 8 Buffer presets)
Reference Input	Internal only
PTZ Camera Control (Via IP)	Number of connected cameras: Up to 8 cameras Pan / Tilt / ZOOM / FOCUS control: 3 axis joystick (ZOOM / FOCUS is switched by pressing the upper button) ZOOM control: Independent rocker switch IRIS control: independent IRIS knob, pressed AUTO / manual switching FOCUS control: Independent FOCUS knob, pressed AUTO / manual switching Preset control: store / recall, up to 100 positions OSD menu control: OSD button*6 White balance control: GUI screen Camera menu or OSD screen (Auto / PST A / PST B / Execute)*6 CAM / BAR selection: GUI screen Camera menu or OSD screen*6
Tally Output	DB-15 Tally port
Network Connector	RJ-45 x 2 1000BASE-T / 100BASE-TX / 10BASE-TX
USB Host I/F	USB3.0 x 4
Accessory	AC adaptor, Power cable, keyboard, mouse

*1: 3G-SDI corresponds to Level-A only.
*2: The 1080/59.94p and 1080/50p formats are not supported for HDMI input.
*3: You cannot use the SDI input 1 and the HDMI connector at the same time.
*4: HDMI and Display port can not be used simultaneously.
*5: Only available when plug-in provided by NewTek is installed.
*6: OSD function is available for Panasonic PTZ camera of SDI and HDMI output.
It is not available for those of NDI | HX output.

As of April, 2018

AV-HLC100 Block Diagram



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EC98J2010
051

Factories of AVC Networks Company have received ISO14001:2004-the Environmental Management System certification.
(Except for 3rd party's peripherals.)

SP-SYSTEMPE5WEB

201804UP-1 Printed in Japan